Feb. 1996
No. 60103R

JVC Service Manual

3-CCD COLOR VIDEO CAMERA
WITH S-VHS RECORDER

MODEL GY-X3

VICTOR COMPANY OF JAPAN, LIMITED

SC-00-5035, 1/2

JVC Manual Change Information

Model	Service Manual No.	Performed at Factory	Reference Information
GY-X3U GY-X3E	No.60103/60103R No.60103R	XXXX0594 to XXXX0693 XXXX0021 to XXXX0120	

SUBJECT : Improvement of spherical aberration **DATE :** March 8th. 1996

The following components has been added to improve spherical aberration of the zoom lens , especially when the lens is fully opened, as follows.

Refer to SECTION 5, Exploded View and Parts List of the service manual.

Symbol No.	Previous parts No.	New Parts No.	Parts Name	Remarks
7	SC32017-001	SC32017-011	Mount Ring	
32		SC45969-001	Filter	Added
34		SC46001-001	Space Ring	Added
33		SC45970-001	Filter Retaine	Added

From the following serial number, the optical base assembly will be changed ,instead of above as permanent improvement.

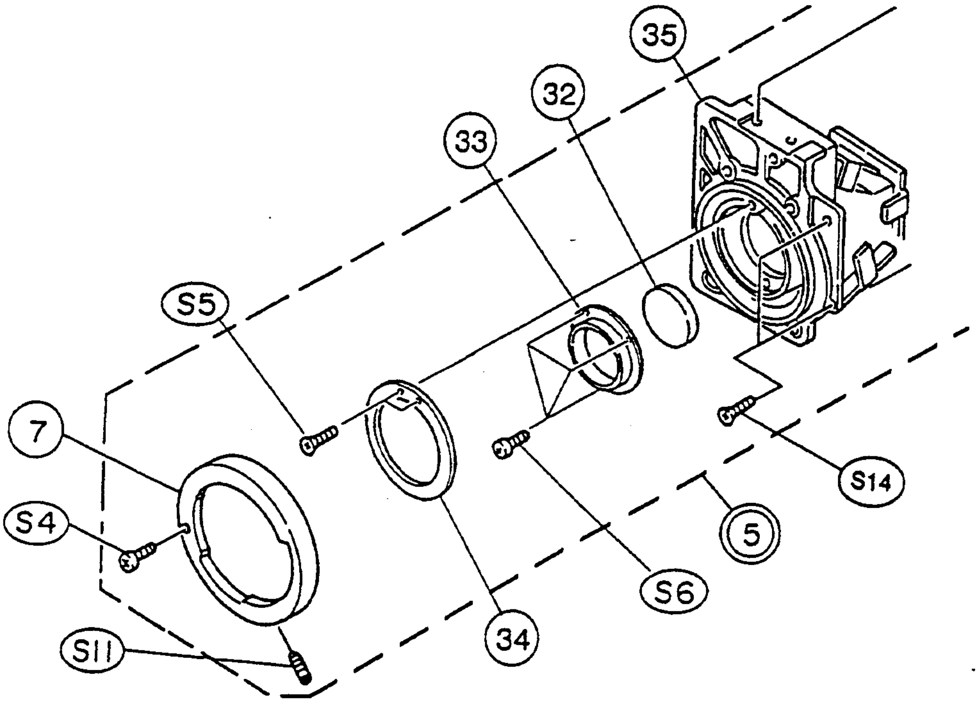
Symbol No.	Previous Parts No.	New Parts No.	Parts Name
35	SCM0891-00A	SCM0891-01A	Optical base assembly

Serial number performed	GY-X3U	xxxx0694 and after
	GY-X3E	xxxx0121 and after

NOTE: The back focus of the lens and 3,6,6 ajustment of black level need to be re-ajusted after these parts are changed.

SC-00-5035,2/2

JVC Manual Change Information


35
32
33
S5
7
S4
S11
34
S6
5
S14

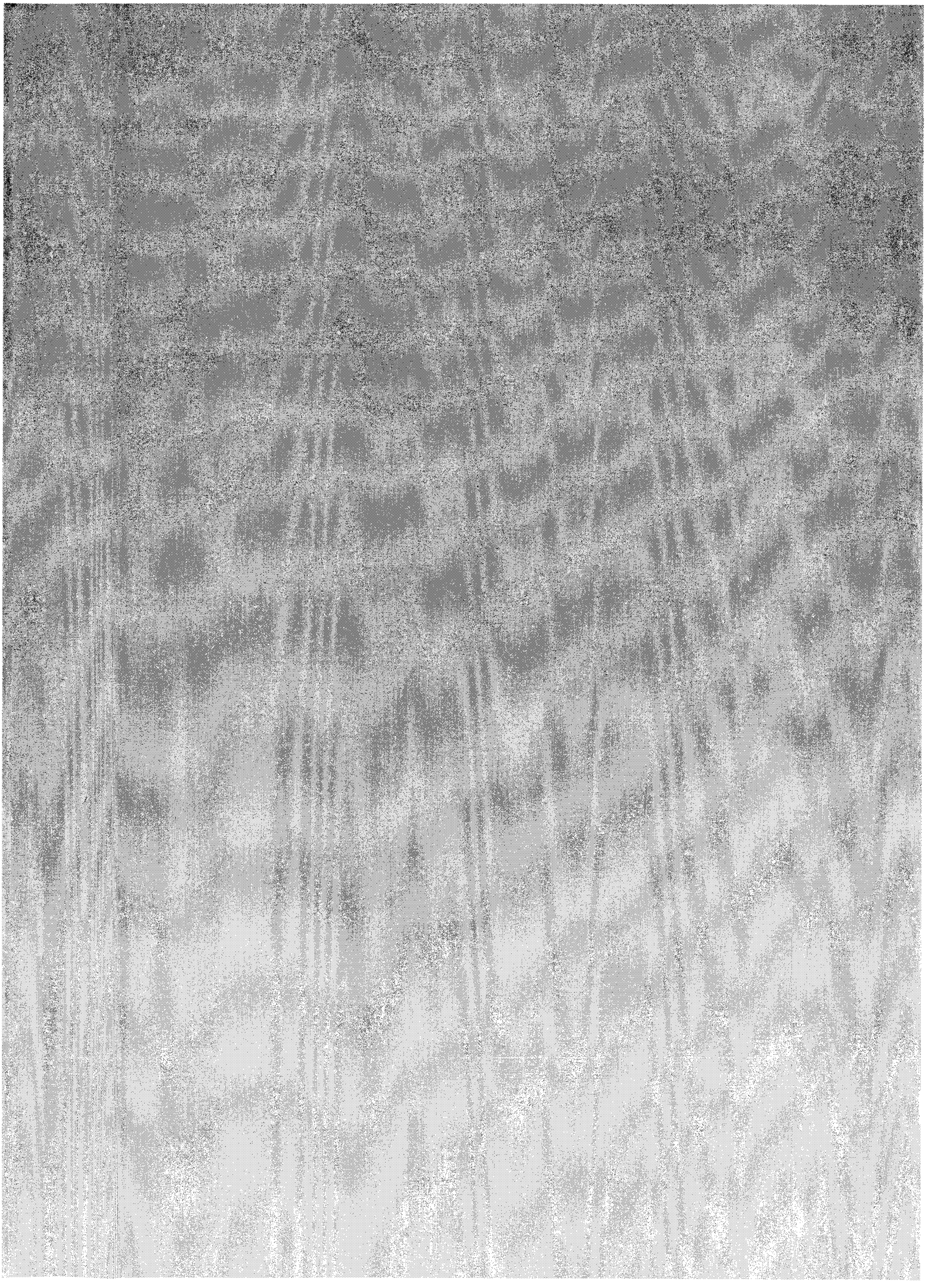
No.60103R

JVC Service Manual

MODEL GY-X3

COPYRIGHT © 1996 VICTOR COMPANY OF JAPAN, LTD.

Printed in Japan



Important Safety Precautions

Prior to shipment from the factory, JVC products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

● Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the ⚠ symbol and shaded (▨) parts are critical for safety.
   Replace only with specified part numbers.
   Note: Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.

3. Fuse replacement caution notice.
   Caution for continued protection against fire hazard.
   Replace only with same type and rated fuse(s) as specified.

4. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads

5. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape
   2) PVC tubing
   3) Spacers
   4) Insulation sheets for transistors
   5) Barrier

6. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.

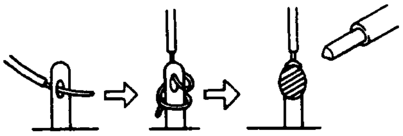


Fig. 1

7. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.)

8. Check that replaced wires do not contact sharp edged or pointed parts.

9. When a power cord has been replaced, check that 10—15 kg of force in any direction will not loosen it.

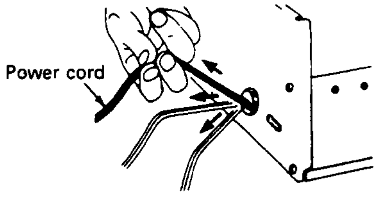


Fig. 2

10. Also check areas surrounding repaired locations.

11. Products using cathode ray tubes (CRTs)
    In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission. Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits. Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

12. Crimp type wire connector
    In such cases as when replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.
    1) **Connector part number** : E03830-001
    2) **Required tool** : Connector crimping tool of the proper type which will not damage insulated parts.
    3) **Replacement procedure**
       (1) Remove the old connector by cutting the wires at a point close to the connector.
       Important : Do not reuse a connector (discard it).

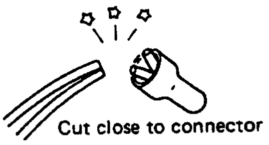


Fig. 3

(2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

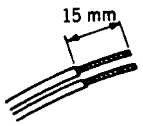


Fig. 4

(3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.

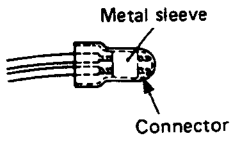


Fig. 5

(4) As shown in Fig. 6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

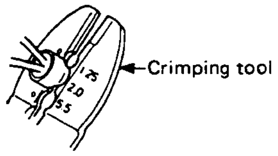


Fig. 6

(5) Check the four points noted in Fig. 7.

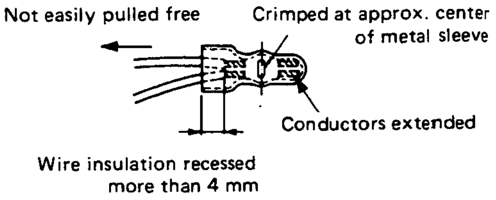

Not easily pulled free
Crimped at approx. center of metal sleeve
Conductors extended
Wire insulation recessed more than 4 mm

Fig. 7

● Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions, Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. **Insulation resistance test**
   Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

2. **Dielectric strength test**
   Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

3. **Clearance distance**
   When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table 1 below.

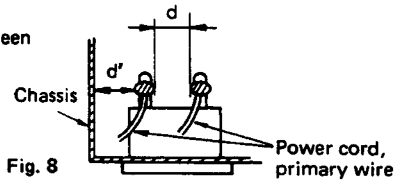


Fig. 8

4. **Leakage current test**
   Confirm specified or lower leakage current between earth ground/power cord plug prongs and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).
   Measuring Method: (Power ON)
   Insert load Z between earth ground/power cord plug prongs and externally exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure 9 and following table 2.

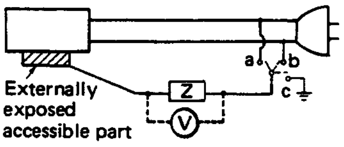


Fig. 9

5. **Grounding (Class I model only)**
   Confirm specified or lower grounding impedance between earth pin in AC inlet and externally exposed accessible parts (Video in, Video out, Audio in, Audio out or Fixing screw etc.).
   Measuring Method:
   Connect milli ohm meter between earth pin in AC inlet and exposed accessible parts. See figure 10 and grounding specifications.

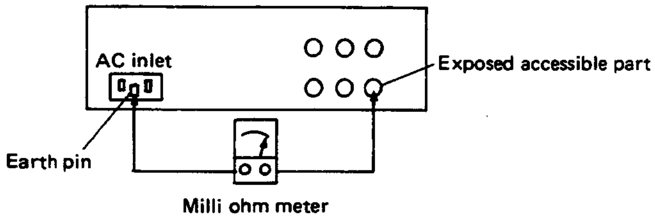


Fig. 10

Grounding Specifications

Region	Grounding Impedance (Z)
USA & Canada	Z ≦ 0.1 ohm
Europe & Australia	Z ≦ 0.5 ohm

AC Line Voltage	Region	Insulation Resistance (R)	Dielectric Strength	Clearance Distance (d), (d')
100 V	Japan	R ≧ 1 MΩ/500 V DC	AC 1 kV 1 minute	d, d' ≧ 3 mm
100 to 240 V			AC 1.5 kV 1 minute	d, d' ≧ 4 mm
110 to 130 V	USA & Canada	–	AC 900 V 1 minute	d, d' ≧ 3.2 mm
110 to 130 V 200 to 240 V	Europe & Australia	R ≧ 10 MΩ /500 V DC	AC 3 kV 1 minute (Class II) AC 1.5 kV 1 minute (Class I)	d ≧ 4 mm d' ≧ 8 mm (Power cord) d' ≧ 6 mm (Primary wire)

Table 1 Specifications for each region

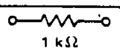
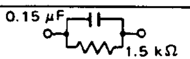
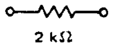
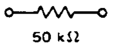
AC Line Voltage	Region	Load Z	Leakage Current (i)	a, b, c
100 V	Japan	 1 kΩ	i ≦ 1 mA rms	Exposed accessible parts
110 to 130 V	USA & Canada	 0.15 μF 1.5 kΩ	i ≦ 0.5 mA rms	Exposed accessible parts
110 to 130 V 220 to 240 V	Europe & Australia	 2 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Antenna earth terminals
		 50 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Other terminals

Table 2 Leakage current specifications for each region

Note: These tables are unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

TABLE OF CONTENTS

Section Title Page

Important Safety Precautions

INSTRUCTIONS

1. SERVICE CAUTIONS AND DISASSEMBLY

1.1 REPLACEMENT OF FUSE 1-1
1.2 REMOVAL OF VIEWFINDER 1-1
1.3 REMOVAL OF BATTERY HOLDER 1-1
1.4 REMOVAL OF MICROPHONE FROM BODY 1-2
1.5 REMOVAL OF LENS 1-2
1.6 REMOVAL OF MAIN PARTS 1-2
  1.6.1 Removing of left side cover 1-2
  1.6.2 How to open right side cover 1-3
  1.6.3 Removal of optical block assembly 1-3
  1.6.4 Removing of front frame 1-4
  1.6.5 Replacement of CCD block 1-5
  1.6.6 Removing of VTR assembly 1-6
1.7 REMOVAL OF MAIN BOARDS 1-6
  1.7.1 Removing of AUCP board 1-6
  1.7.2 Removing of DR, PR1, PR2, CC, PS2 boards 1-6
  1.7.3 Removing of VIDEO board 1-7
  1.7.4 Removing of S/S board 1-7
  1.7.5 Removing of SE board 1-7
  1.7.6 Removing of P/R JUNC, M JUNC boards 1-8
  1.7.7 Removing of PRE/REC, VO board 1-8
1.8 REMOVAL OF CASSETTE HOUSING 1-8
1.9 DISASSEMBLING OF LENS 1-9
  1.9.1 Removing of lens hood 1-9
  1.9.2 Removing of main cover 1-9
  1.9.3 Removing of IRIS ZOOM AMP board 1-10
  1.9.4 Removing of motor assembly 1-10
1.10 DISASSEMBLING OF VIEWFINDER 1-10
  1.10.1 Opening of cover 1-10
  1.10.2 Removing of CRT 1-11
  1.10.3 Removing of boards 1-11
1.11 FUNCTIONS OF INTERNAL SWITCHES 1-12
  1.11.1 Switches on AUCP board 1-12
  1.11.2 Internal switch on CC board 1-13
  1.11.3 Internal switch on SE board 1-13
  1.11.4 Internal switch on PR2 board 1-13
  1.11.5 System reset 1-14
1.12 MANUAL TAKING-OUT OF CASSETTE IN AN EMERGENCY 1-14
1.13 TRIPOD BASE 1-15
1.14 CAUTION ON CALLING HOUR METER ONTO DISPLAY 1-15
1.15 WARNING MESSAGES 1-15
1.16 PERFORMANCES PECULIAR TO THIS MODEL 1-16
1.17 SPECIAL IMPLEMENTS FOR SERVICE 1-16

2. MECHANISM ADJUSTMENT FOR VTR SECTION NTSC/PAL

2.1 PREPARATION 2-1
  2.1.1 Precautions 2-1
  2.1.2 Jigs and special tools for mechanism adjustment 2-1
  2.1.3 Specifications of alignment tapes 2-1
  2.1.4 Oil and Grease 2-1
2.2 PERIODIC REPLACEMENT OF MAIN PARTS 2-2
  2.2.1 Location of main parts 2-3
  2.2.2 Maintenance step of main parts 2-4
  2.2.3 Adjustments required after replacement of drum assembly 2-5
  2.2.4 Adjustments required after replacement of A/C head 2-5
  2.2.5 Cleaning 2-5
  2.2.6 Oiling and greasing 2-5
2.3 REPLACEMENT OF MAIN PARTS 2-6
2.4 REASSEMBLING OF MECHANISM 2-12
2.5 TAPE TENSION ADJUSTMENT 2-14
2.6 INTERCHANGEABILITY ADJUSTMENT 2-15
2.7 ADJUSTMENT OF TAPE TRANSPORT SYSTEM 2-20
2.8 TABLE OF SCREWS AND SLIT WASHERS USED IN THIS SET 2-21

Section Title Page

3. ELECTRICAL ADJUSTMENT

3.1 ELECTRICAL ADJUSTMENT FLOWCHART 3-1
  3.1.1 Electrical adjustment flowchart for camera section 3-1
  3.1.2 Electrical adjustment flowchart for VTR section 3-2
3.2 PRECAUTIONS ON ELECTRICAL ADJUSTMENT 3-3
3.3 TOOLS AND TEST INSTRUMENTS REQUIRED FOR ADJUSTMENT 3-3
  3.3.1 Test instruments required for adjustment 3-3
  3.3.2 Special implements required for adjustment 3-3
  3.3.3 Convenient tool for servicing 3-3
  3.3.4 Specifications of alignment tapes 3-4
  3.3.5 Signal required for video system adjustment 3-5
3.4 SETUP FOR ELECTRICAL ADJUSTMENT 3-5
  3.4.1 Standard setup for adjustment 3-5
  3.4.2 Supply of external video signal to VTR 3-6
  3.4.3 Simultaneous display in both viewfinder and monitor 3-6
3.5 STANDARD SWITCH SETTING 3-6
3.6 ADJUSTMENT OF CAMERA SECTION 3-7
  3.6.1 Adjustment of SSG 3-7
  3.6.2 Adjustment of encoder 3-7
  3.6.3 Adjustment of black level 3-8
  3.6.4 Adjustment of input gain (Setting of input signal level) .. 3-9
  3.6.5 Adjustment of video level 3-10
  3.6.6 Adjustment of knee slope and white clip 3-12
  3.6.7 Adjustment of automatic control system 3-13
  3.6.8 Adjustment of contour corrector 3-14
  3.6.9 Adjustment of CCD driver 3-16
3.7 ADJUSTMENT OF VIEWFINDER 3-17
3.8 ADJUSTMENT OF SYSCON/SERVO SYSTEM 3-19
3.9 ADJUSTMENT OF AUDIO SYSTEM 3-21
  3.9.1 Adjustment of Hi-Fi audio 3-21
  3.9.2 Adjustment of normal audio 3-23
3.10 ADJUSTMENT OF VIDEO SYSTEM 3-25
3.11 CHECKING OF LENS 3-33
  3.11.1 IRIS MANUAL OPERATION 3-33
  3.11.2 ZOOM MANUAL OPERATION 3-33
  3.11.3 FOCUS OPERATION 3-33
  3.11.4 IRIS MODE SWITCH 3-33
  3.11.5 IRIS MOMENTARY AUTO SWITCH 3-33
3.12 ADJUSTMENT OF ZOOM LENS 3-33
  3.12.1 Adjustment of iris potentiometer 3-33
  3.12.2 Adjustment of limit switch position 3-33
  3.12.3 Adjustment of iris sensitivity 3-34
  3.12.4 Adjustment of iris setting position 3-34
  3.12.5 Adjustment of iris operation speed 3-34
  3.12.6 Adjustment of zooming-in/out speed 3-34

4. CHARTS AND DIAGRAMS

SCHEMATIC DIAGRAM NOTES 4-1
4.1 DR BOARD BLOCK DIAGRAM 4-2
4.2 IS (B,G,R) BOARD BLOCK DIAGRAM 4-3
4.3 PR1 BOARD BLOCK DIAGRAM 4-4
4.4 PR2 BOARD BLOCK DIAGRAM 4-5
4.5 CC BOARD BLOCK DIAGRAM 4-6
4.6 SE BOARD BLOCK DIAGRAM 4-7
4.7 VIDEO BOARD BLOCK DIAGRAM 4-8
4.8 S/S BOARD BLOCK DIAGRAM 4-9
4.9 AUCP BOARD BLOCK DIAGRAM (CPU SECTION). 4-10
4.10 AUCP BOARD BLOCK DIAGRAM (AUDIO SECTION) 4-11
4.11 OVERALL WIRING DIAGRAM 4-12
  4.11.1 CAMERA OVERALL WIRING DIAGRAM 4-12
  4.11.2 VTR OVERALL WIRING DIAGRAM (M JUNC<15>, A/C HEAD<17>, SW3<18>, EAR<19>, SW1<21>, END SENSOR<22>, START SENSOR<23>,SW2<24>, MT <27>, M. IF<28>, UPPER DRUM<32>, MIC JACK<33>) 4-13
4.12 DR BOARD SCHEMATIC DIAGRAM<01> 4-14
4.13 DR CIRCUIT BOARD 4-15

4.14 IS (B, G, R) BOARD SCHEMATIC DIAGRAM<02>, <03>, <04> 4-16
4.15 IS (B, G, R) CIRCUIT BOARD 4-17
4.16 PR1 BOARD SCHEMATIC DIAGRAM<05> 4-18
4.17 PR1 CIRCUIT BOARD 4-19
4.18 PR2 BOARD SCHEMATIC DIAGRAM<06> 4-20
4.19 PR2 CIRCUIT BOARD 4-21
4.20 CC BOARD SCHEMATIC DIAGRAM<07> 4-22
4.21 CC CIRCUIT BOARD 4-23
4.22 SE BOARD SCHEMATIC DIAGRAM<08> 4-24
4.23 SE CIRCUIT BOARD 4-25
4.24N VIDEO BOARD SCHEMATIC DIAGRAM(NTSC) (1/2)<09> 4-26N
4.24P VIDEO BOARD SCHEMATIC DIAGRAM(PAL) (1/2)<09> 4-26P
4.25 VIDEO CIRCUIT BOARD 4-28
4.26 PRE/REC JUNC BOARD SCHEMATIC DIAGRAM<10> 4-30
4.27 PRE/REC JUNC CIRCUIT BOARD 4-31
4.28 AU BOARD SCHEMATIC DIAGRAM<11> 4-31
4.29 AU CIRCUIT BOARD 4-31
4.30 PRE/REC BOARD SCHEMATIC DIAGRAM<12> 4-32
4.31 PRE/REC CIRCUIT BOARD 4-33
4.32 S/S BOARD SCHEMATIC DIAGRAM<13> 4-34
4.33 S/S CIRCUIT BOARD 4-35
4.34 MDA BOARD SCHEMATIC DIAGRAM<14> 4-36
4.35 MDA/M JUNC CIRCUIT BOARDS 4-37
4.36 AUCP BOARD SCHEMATIC DIAGRAM (AUDIO SECTION)– (1/4)<16> 4-38
4.37 AUCP/A/C HEAD/SW3/MIC JACK/EAR CIRCUIT BOARDS4-42
4.38 PS1 BOARD SCHEMATIC DIAGRAM <20> 4-44
4.39 PS1/SW1/SW2 CIRCUIT BOARDS 4-45
4.40 PS2 BOARD SCHEMATIC DIAGRAM<25> 4-46
4.41 PS2 CIRCUIT BOARD 4-47
4.42 VO BOARD SCHEMATIC DIAGRAM<26> 4-48
4.43 VO CIRCUIT BOARD 4-48
4.44 MT/M. IF/S. SENS/E.SENS CIRCUIT BOARDS 4-49
4.45 VF OVERALL WIRING DIAGRAM (HV/DEF)<29>/<30> 4-50
4.46 HV/DEF CIRCUIT BOARDS 4-51
4.47 IRIS ZOOM AMP BOARD SCHEMATIC DIAGRAM<31> . 4-52
4.48 IRIS ZOOM AMP CIRCUIT BOARD 4-53
4.49 SCHEMATIC DIAGRAM of IC's 4-54

5. EXPLODED VIEWS AND PARTS LIST

5.1 CAMERA HEAD ASSEMBLY <M1> 5-1
5.2 CABINET ASSEMBLY <M2> 5-3
5.3 CHASSIS ASSEMBLY <M3> 5-5
5.4 MECHANISM ASSEMBLY <M4> 5-7
5.5 RIGHT SIDE COVER ASSEMBLY <M5> 5-11
5.6 BATTERY HOLDER ASSEMBLY <M6> 5-13
5.7 HANDLE ASSEMBLY <M7> 5-14
5.8 VF ASSEMBLY <M8> 5-15
5.9 ZOOM LENS ASSEMBLY <M9> 5-17

6. ELECTRICAL PARTS LIST

6.1 DR BOARD ASSEMBLY LIST <01> 6-2
6.2 ISB BOARD ASSEMBLY LIST <02> 6-4
6.3 ISG BOARD ASSEMBLY LIST <03> 6-5
6.4 ISR BOARD ASSEMBLY LIST <04> 6-5
6.5 PR1 BOARD ASSEMBLY LIST <05> 6-6
6.6 PR2 BOARD ASSEMBLY LIST <06> 6-8
6.7 CC BOARD ASSEMBLY LIST <07> 6-11
6.8 SE BOARD ASSEMBLY LIST <08> 6-13
6.9 VIDEO BOARD ASSEMBLY LIST <09> 6-15
6.10 PRE/REC JUNC BOARD ASSEMBLY LIST <10> 6-25
6.11 AU BOARD ASSEMBLY LIST <11> 6-26
6.12 PRE/REC BOARD ASSEMBLY LIST <12> 6-26
6.13 S/S BOARD ASSEMBLY LIST <13> 6-28
6.14 MDA BOARD ASSEMBLY LIST <14> 6-31
6.15 M JUNC BOARD ASSEMBLT LIST <15> 6-32
6.16 AUCP BOARD ASSEMBLY LIST <16> 6-32
6.17 A/C HEAD BOARD ASSEMBLY LIST <17> 6-40
6.18 SW3 BOARD ASSEMBLY LIST <18> 6-40
6.19 EAR BOARD ASSEMBLY LIST <19> 6-40
6.20 PS1 BOARD ASSEMBLY LIST <20> 6-41
6.21 SW1 BOARD ASSEMBLY LIST <21> 6-42
6.22 END SENSOR BOARD ASSEMBLY LIST <22> 6-42
6.23 START SENSOR BOARD ASSEMBLY LIST <23> 6-42
6.24 SW2 BOARD ASSEMBLY LIST <24> 6-42
6.25 PS2 BOARD ASSEMBLY LIST <25> 6-43
6.26 VO BOARD ASSEMBLY LIST <26> 6-43
6.27 MT BOARD ASSEMBLY LIST <27> 6-43
6.28 M.IF BOARD ASSEMBLY LIST <28> 6-44
6.29 HV BOARD ASSEMBLY LIST <29> 6-44
6.30 DEF BOARD ASSEMBLY LIST <30> 6-45
6.31 IRIS ZOOM BOARD ASSEMBLY LIST <31> 6-46
6.32 UPPER DRUM BOARD ASSEMBLY LIST <32> 6-47
6.33 MIC JACK BOARD ASSEMBLY LIST <33> 6-47

7. PACKING EXPLODED VIEW AND PARTS LIST

7.1 PACKING ASSEMBLY <MA> 7-1

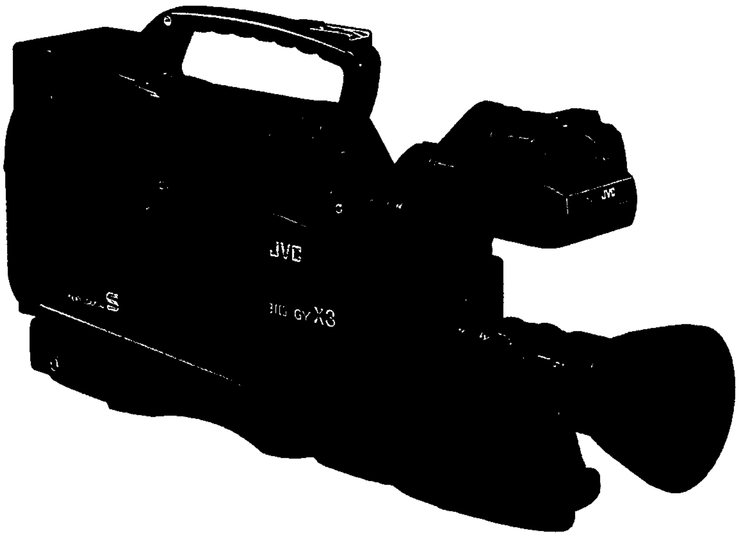
8. CIRCUIT DESCRIPTION

8.1 IS (B, G, R) CIRCUIT BOARD 8-1
  8.1.1 CDS Circuit 8-2
  8.1.2 Half-pitched Pixel Offset (G channel only) 8-3
8.2 DR CIRCUIT BOARD 8-4
  8.2.1 Timing Generator 8-4
  8.2.2 Horizontal Drive Circuit 8-4
  8.2.3 Vertical Drive Circuit 8-5
  8.2.4 Pre-amplifier Circuit 8-5
8.3 PR1 CIRCUIT BOARD 8-6
  8.3.1 Gain Control 8-6
  8.3.2 White Balance Adjustment 8-6
  8.3.3 Black Level Control 8-7
  8.3.4 Flare Correction 8-7
8.4 PR2 CIRCUIT BOARD 8-8
  8.4.1 Knee Circuit 8-8
  8.4.2 Gamma Correction 8-9
  8.4.3 White clip 8-10
  8.4.4 Black Slice 8-10
  8.4.5 Contour Mix 8-10
8.5 CC CIRCUIT BOARD 8-10
  8.5.1 Vertical Contour Correction 8-10
  8.5.2 Horizontal Contour Correction 8-11
  8.5.3 Noise Slice Circuit 8-11
8.6 SE CIRCUIT BOARD 8-12
  8.6.1N Color Encoder (NTSC) 8-12
  8.6.1P Color Encoder (PAL) 8-12
8.7 VIDEO CIRCUIT BOARD 8-12
  8.7.1 Y Signal Recording System 8-12
  8.7.2 Chroma Signal Recording System 8-14
  8.7.3 Y Signal Playback System 8-16
  8.7.4 Chroma Signal Playback System 8-17
  8.7.5 Frequency and phase shift Compensation 8-18
8.8 S/S CIRCUIT BOARD 8-19
  8.8.1 Drum Servo Control 8-19
  8.8.2 Capstan Servo Control 8-20
  8.8.3 Frame Servo Control 8-20
  8.8.4 Zero Frame Edit 8-21
  8.8.5 CTL Time Code 8-22
  8.8.6 Mechanism mode 8-24
8.9 AUCP CIRCUIT BOARD 8-26
  8.9.1 Audio 8-26
  8.9.2 CPU 8-29
  8.9.3 LCD Microprocessor 8-31
  8.9.4 LCD Microprocessor Reset 8-31

JVC Instructions

3-CCD COLOR VIDEO CAMERA WITH S-VHS VCR

GY-X3



For Customer Use:
Enter below the Serial No. witch is located on the top frame. Retain this information for future reference.

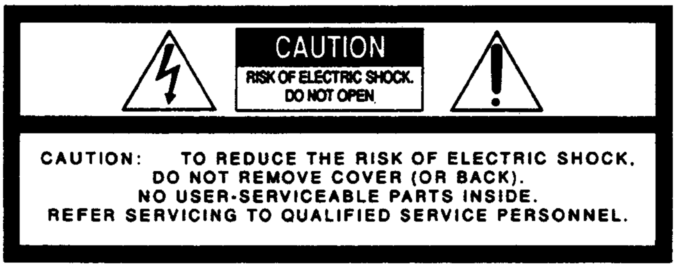
Model No. GY-X3

Serial No.

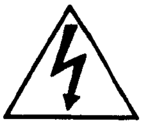
CONGRATULATIONS

Thank you for purchasing the JVC GY-X3. 3-CCD Full Size Professional S Camcorder.
To gain maximum benefit from the camera, it is suggested that you study this booklet carefully. After reading, retain it for future reference.

WARNINGS



CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK.
DO NOT REMOVE COVER (OR BACK).
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



The lightning flash with arrowhead symbol, within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Due to design modifications, data given in this instruction book are subject to possible change without prior notice.

WARNING:
TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

AVERTISSEMENT:
POUR EVITER LES RISQUES D'INCENDIE OU D'ELECTROCUTION, NE PAS EXPOSER L'APPAREIL A L'HUMIDITE OU A LA PLUIE.

LITHIUM BATTERY REPLACEMENT MARKING
REPLACE BATTERY WITH MATSUSHITA ELECTRIC (OR PANASONIC) CR2025. USE OF ANOTHER BATTERY MAY PRESENT A RISK OF FIRE OR EXPLOSION.

LITHIUM BATTERY DISPOSAL MARKING
WARNING – THE BATTERY USED IN THIS DEVICE MAY PRESENT A FIRE OR CHEMICAL BURN HAZARD IF MISUSED. DO NOT RECHARGE, DISASSEMBLE, HEAT ABOVE 100°C (212°F) OR INCINERATE.
DISPOSE OF USED BATTERY PROMPTLY.
KEEP AWAY FROM CHILDREN.
DO NOT DISASSEMBLE AND DO NOT DISPOSE OF IN FIRE.

Information for Canada
This product complies with D.O.C limits (C.R.C., C. 1374) pertaining to class B digital apparatus.

Renseignement pour Canada
Ce produit est conforme aux normes du M.D.C. (C.R.C., ch. 1374) s'appliquant aux appareils numériques de classe B.

POWER SYSTEM
This color video camera should be used with 12 V DC only.

CAUTION:
To prevent electric shocks and fire hazards, do NOT use other than specified power source.

Système d'alimentation
Cette caméra vidéo couleur ne doit être utilisée que sur tension continue de 12 V.

Attention:
Pour éviter tout risque d'incendie ou d'électrocution, n'utilisez aucune autre source d'alimentation.

CONTENTS

Features 3
Precautions 3

Controls, Indicators, & Connectors

- Overview 6
- Function box 10
- LCD display 12
- Viewfinder 15
- Zoom lens 16

Preparations Before Use

- Tripod mounting 17
- Video cassettes 18
- Loadiing, ejecting 18
- Power Supply 19

Adjustments Before Shooting (Camera Section)

- Preliminary adjustments 20
- Back focus adjustment 20
- White balance adjustment 21

Adjustments Before Shooting (VCR Section) 22

Shooting Operation

- Normal operation 23
- Checking playback pictures 25

Advanced Functions

- Recording shooting date/time 26
- FAS (Full auto shooting) 27
- Iris 28
- Insert editing 29
- Variable scan 30
- Tape remaining time display 31
- Hour meter display 31
- Status display (camera/VCR status display) 32
- Max gain mode 34
- Flying erase head 34
- CTL time code 35

Connecting to External Equipment 36
Warnings 37
Trouble shooting 38
Specifications 39
- External dimensions .... Back cover

FEATURES

- **High-picture-quality 3-CCD camera**
  A high-resolution 1/3-inch CCD affords high sensitivity of F8 at 2000 lux as well as enhanced color separation.
- **S-VHS circuitry for long-time, high-picture-quality recording**
  The built-in full-size S-VHS VCR lets you record up to two hours of high-quality images on a single cassette (T-120 cassette). To assure the best possible results, the tape mechanism features a standard 62-mm drum and operates in standard (SP) mode only.
- **Full-auto shooting (FAS) mode**
  Move from indoors to outdoors, from a well-lit exterior to a dark interior, all without having to reset the camera. With the FAS function, settings are automatically adjusted in response to changing conditions with no need for switching or filter operations. This comprehensive control incorporates video ALC (Automatic Level Control), EEI (Electronic Iris), auto iris, FAW (Full-time Auto White) and audio ALC (Automatic Level Control).
- **Lightweight, compact body**
  At only 5.8 kg, the GY-X3 is light enough for comfortable one-man operation. The aluminum frame is built to withstand the shocks of portable operation and assures long-lasting durability.
- **Max gain mode for actual-use 4-lux low illuminance**
  Ideal for shooting scenes where lights are inappropriate or cannot be used. Sensitivity can be increased by +24 dB.
- **Hi-Fi 2-channel/normal 1-channel audio recording**
  Two-channel Hi-Fi recording plus one-channel normal audio recording provide superior sound performance and flexibility.
- **Variable scan mode**
  Eliminates the flicker normally seen when shooting computer screens.
- **Time date generator**
  Year, month, date, hour, minute and second can be recorded.
- **Insert recording mode**
  Previously recorded video and Hi-Fi sound can be replaced with new material.
- **CTL time code**
  For accurate editing, CTL time codes are automatically recorded.

PRECAUTIONS

Safety precautions

- Use only a DC 12 V power supply.
- Do not modify the unit or operate it with the cover off.
  The high-voltage parts inside may cause electric shock. There are no-user-serviceable parts inside. For any internal inspection, adjustment, or repair, consult your nearest JVC dealer.
- Do not allow flammable objects, water, or metal to get inside the unit.
- If any of the following incidents occurs, immediately turn off the main unit's power to avoid a fire or electric shock. Then, be sure to unplug the power cord or remove the battery and consult your nearest JVC dealer. Do not attempt to repair the unit yourself.
  - A foreign object such as a flammable object, water, or metal gets inside the unit.
  - The unit is dropped or there is evidence of external damage.
  - An abnormality (abnormal noise, smell or smoke) occurs.
  - The cable conductor of the power cord is exposed or damaged.
- Pay special attention to the site where the unit is to be installed. If the unit is placed somewhere where it might drop, injury or damage may result. In areas exposed to high humidity, fire or electric shock may result.
  - Do not place the unit on an unstable or inclined table.
  - Fix the tripod securely.
  - Do not put the unit in a place subject to extreme humidity (in a bath room or near a clothes drier) or a place exposed to lamp soot or steam (near a kitchen table or a humidifier).

If there is a danger of being struck by lightning curing outdoor shooting, evacuate to a sfe place immediately.

- When removing the button battery used in this unit, be sure to store it in a place inaccessible to children. If a child accidentally swallows the battery, consult your doctor immediately.
- Take care not to allow children to put their hands in the cassette tape insertion slot. This may cause an injury.
- Do not heat, break, or short-circuit the battery. Do not throw the battery into a fire.
- Remove the battery when not using the unit for a long period of time. Leaving the battery in for extended periods without use may result in leakage which can damage the unit and burn anyone who handles it. If a leakage occurs, wipe the acid off the battery case, then remove the battery and replace with a new one. If the acid sticks to the hands, etc., wash it with water. For more information, please read the notes provided with the battery.
- Do not use the battery other than as specified.
- Do not place this unit upside-down, sideways, or put it on a carpet. Do not cover this unit with a table cloth or other material. Otherwise, it may overheat and catch fire. Do not allow children to sit on or otherwise handle the unit.

Handling precautions

- **Supply voltage**
  Make sure that the power is between 11.5V and 15V DC. If the power voltage is too low, abnormal color and increased noise could occur. Do not exceed 15V DC in any case, or the unit could be damaged.
- **Environmental temperature and humidity**
  Do not use this unit outside the operating temperature of 0°C to +40°C or humidity of 30% to 80%. Otherwise, damage may result. The CCD, in particular, is very susceptible to damage when exposed to excessive temperatures or humidity with the result that white dots can appear on the screen. For long-term storage, select a place within the temperature range of -20°C to +60°C.
- Where there are strong electromagnetic waves or magnetism, for example near a radio or TV transmitter, transformer, motor, etc., the picture may contain noise and the colors may be incorrect.
- When a wireless microphone or wireless microphone tuner is used near the camera, the tuner could pick up noise.
  In such a case, select another channel.
- **Only the SP mode is available for recording/playback.**
  Recording/playback cannot be performed in the EP mode.
- **Influence of vibrations**
  When tapes are played back in a place subject to excessive vibrations, color pictures may not be obtained.
- **Notes for transport**
  Do not apply a strong shock to this unit or drop it.
  When holding the camera, be sure to hold the carrying handle. Holding the lens or the viewfinder can damage the unit.
  Remove the battery pack and the video cassette before packing or transport.
- Do not allow the unit to get wet. (Take special care when shooting in rainy weather.)
- Do not leave this unit under direct sunlight in a car with doors and windows closed.
- When using this unit at a beach, try to minimize exposure to water, salt, or sand. Clean any sand or salt off the unit immediately after shooting.
- **Connecting to other equipment**
  Before connecting to other equipment, be sure to turn the power off.
- When using a battery pack, carefully read the instructions provided with the battery pack.
- **Changing the video head**
  Excessive wear of the video head results in poor image quality. When this occurs, the video head must be changed. Please consult your nearest JVC dealer.
- **Lightning and static electricity**
  Lightning, static electricity, and other externally generated electricity can interfere with the functioning of this unit. In this case, set the POWER SEL. switch on the rear panel to OFF then ON or unplug the power cord then plug it in again. If the unit still does not work properly, consult your nearest JVC dealer.
- Do not remove the power supply unit with the power switch set to ON during recording or playback. Otherwise, the tape may be damaged.
- When the unit is not used for a long period of time, take out the battery pack and video cassette.

- **Moisture condensation prevents use of the unit.**
  - You have observed that pouring a cold liquid into a glass will cause drops of water to form on the glass's outer surface. This same phenomenon occurs on the head drum of a video recorder when the recorder is moved from a cool place to a warm place, after heating in a cold room, under extremely humid conditions or in a place directly subjected to the cool air from an air conditioner.
  - Moisture on the head drum can cause severe damage to the video tape, and can lead to internal damage to the recorder itself.
  - If moisture condensation occurs on the head drum, a condensation warning appears in the recorder LCD and the unit enters the Stop mode, unable to function. In such a case, wait for a few hours until the indicator disappears.

- **If the color video camera, VCR and video cassette malfunctions during recording, the recorded contents cannot be guaranteed.**
- **When you're planning an important recording, be sure to test the unit beforehand and ensure that recording is correctly done.**

Video cassette handling

- The GY-X3 employs only cassette carrying the S-VHS and the VHS marks.
- Recording onto prerecorded tapes automatically erases the previously recorded video and audio signals.
- An inverted cassette cannot be inserted.
- Do not load and unload the cassette repeatedly without allowing the tape to run at all. This will slacken the tape and thereby damage it.
- Make certain before loading the cassette that the tape is not slackened. If there is any slack, turn the supply gear on the cassette in the direction of the arrow to take up slack.
- The cassette is equipped with a safety tab to prevent accidental erasure. When the tab is removed, recording is impossible. If you wish to record on a cassette whose tab has been removed, use adhesive tape to reseal the slot.
- To avoid excessive exposure to dust and fingerprints, do not open the front tape cover.
- Do not break, drop, or expose the video cassette to shock.
- If a video cassette is moved from a cold place to a warm place, moisture condensation may occur on the tape surface. Wait about two hours before using it. If a video cassette with condensation is used, the tape will be damaged. Do not attempt to dry a video cassette with a blow drier or other appliance.

Notes on video cassette storage

- Avoid exposing the casettes to direct sunlight, keep them away from heaters.
- Avoid storing the cassettes in humid or dusty places.
- Do not drop the cassettes. Do not expose them to violent vibrations or shocks.
- Do not expose the cassettes to strong magnetic fields (near a motor, transformer or magnet).
- Place the cassettes in cassette cases and position them verttically.

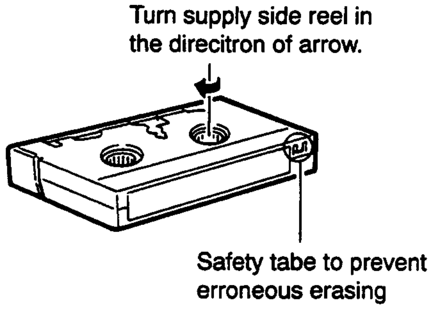
Tape protection

- Do not leave the unit in the Record-Pause mode for too long to avoid discharging the battery and to protect the tape. When using this unit as a camera alone, remove the cassette to protect the tape.

If left in the Rec Pause mode for 30 minutes or more, tape tension is automatically released and drum rotation is stopped. (AUTO SAVE MODE)
To re-engage the Rec Pause mode, press the [REC] button.

- During extended still palyback, tape action is as follows.

Elapsed time	Tape movement
Approx. 3 min. 30 sec.	Advances a few frames.
Approx. 7 min.	Advances a few frames.
Approx. 10 min. 30 sec.	Stops completely.



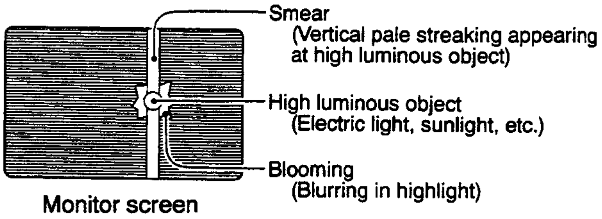
Operation-off circuit during battery operation

Continued battery-operation with the LOW BATTERY indication in the viewfinder and the warning indicator blinking will result in automatic activation of the operation-off circuit. This is to protect the battery pack and the main unit. In this case, replace the battery with the fully-charged one.

NOTE

CCD Smear and Blooming

- Due to the physical structure of the CCD in this camera it is possible to induce vertical streaking or smear when shooting an extremely bright light source.
- Another effect is the expansion of light around a bright light or object called Blooming.
  Just as you protect your image against lens flare (internal lens reflections); please be careful when shooting a bright lightr source.


Smear
(Vertical pale streaking appearing at high luminous object)
High luminous object
(Electric light, sunlight, etc.)
Blooming
(Blurring in highlight)
Monitor screen

Moire or Aliasing

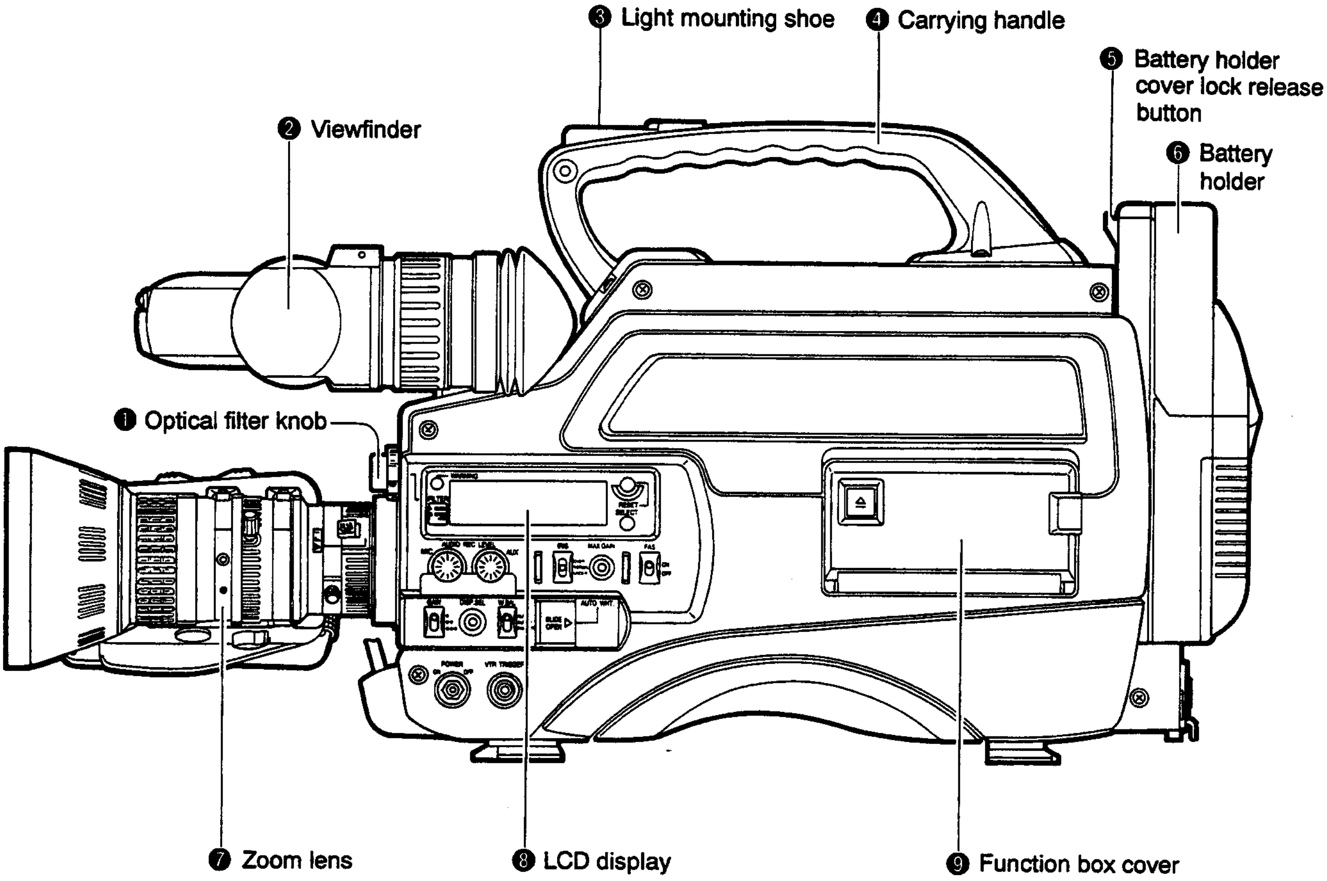
- Shooting stripes or fine patterns may cause a jagged effect or a banding in fine mesh patterns.
  Try repositioning the lens zoom to change the frequency of the detail information and eliminate the distortions.

High Temperatures

- High temperatures can cause CCD sensor pixels to malfunction with the effect of white dots in the image. This condition could damage the CCd, and certainly raises the "fixed pattern" noise level that CCDs have thus giving a noisy picture.

CONTROLS, INDICATORS, CONNECTORS

Overview


❸ Light mounting shoe
❹ Carrying handle
❺ Battery holder cover lock release button
❷ Viewfinder
❻ Battery holder
❶ Optical filter knob
❼ Zoom lens
❽ LCD display
❾ Function box cover

❶ **[FILTER] Optical filter knob**

1. **(3200K):** For shooting indoors, or outdoors when illumination is insufficient.
2. **(3200K and ND filter):** For shooting outdoors on sunny days.

❷ **Viewfinder**

Uses a 1.5-inch black-and-white CRT.
The viewing angle, focus and iris of an object can be checked. Camera and VCR status, settings and various warning indicators can be checked with the character display.
The position of the viewfinder can be adjusted by sliding it to the left or right. The viewing angle can be adjusted up or down. If you want to shoot without keeping your eye on the viewfinder, hold up the eyepiece to directly monitor the CRT screen.
Refer to "Viewfinder" on page 15.

❸ **Light mounting shoe**

For mounting a video light.

❹ **Carrying handle**

Always use the carrying handle when transporting the unit.

❺ **Battery holder cover lock release button**

❻ **Battery holder**

Shown here is the standard battery holder. This can be used for Flat shape type and JVC NB-G1 batteries.

❼ **Zoom lens**

To adjust the viewing angle, focus and iris.
Refer to "Zoom lens" on page 16.

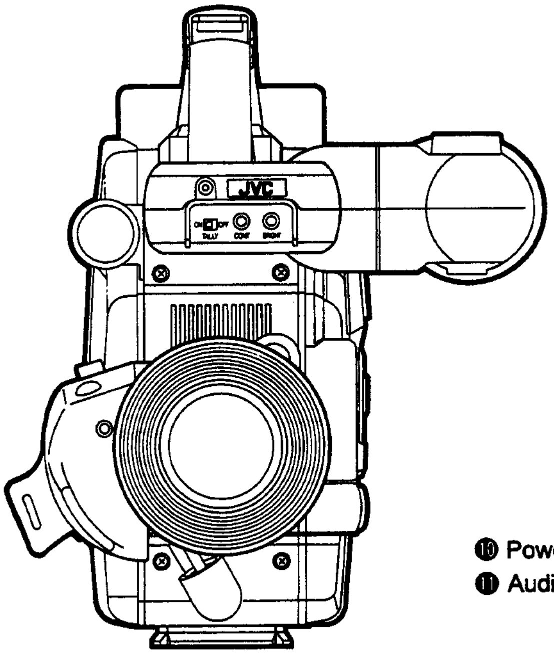
❽ **LCD display**

Shows VCR operation status.
Refer to "LCD display" on page 12.

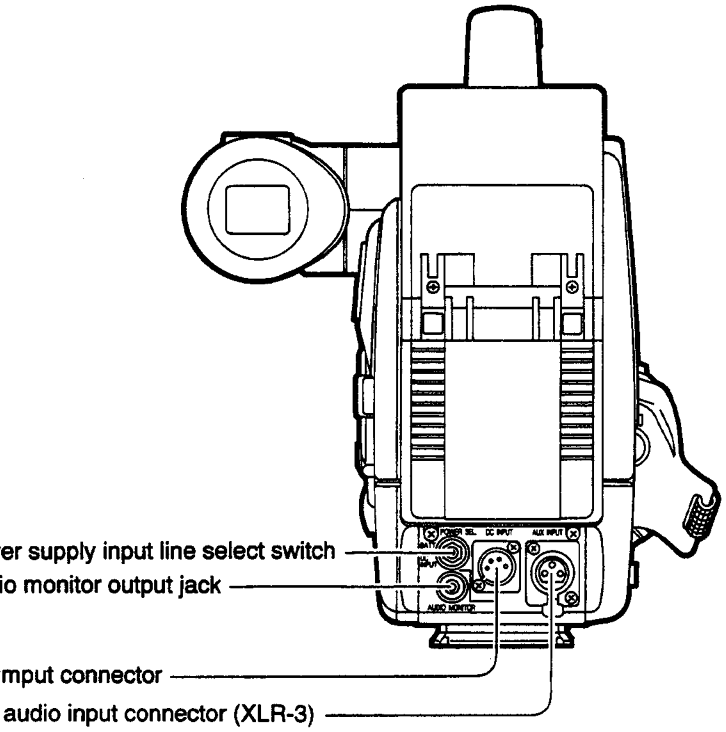
❾ **Function box cover**

To prevent misoperation.
The box includes the VCR operation section and various mode setting switches.
Refer to "Function box" on page 10.

Front


JVC
TALLY
CONT
BRIGHT

Rear


⑩ Power supply input line select switch
⑪ Audio monitor output jack
⑫ DC imput connector
⑬ Aux audio input connector (XLR-3)
POWER SEL.
DC INPUT
AUX INPUT
BATT
AUDIO MONITOR

⑩ [POWER SEL.] Power supply input line select switch

To select either battery operation or DC power.

BATT : To use the battery.
OFF : To turn the power off.
DC INPUT: DC power supply input connector.

Note:

Do not switch between "BATT" and "DC INPUT" quickly, otherwise control of the main unit may be lost. In this case, reset the "POWER SEL" to clear.

⑪ [AUDIO MONITOR] Audio monitor output jack

For a stereo 3.5-dia. plug. The audio monitor line can be selected with ㊸ [Hi-Fi REC] switch.

ON : To monitor Hi-Fi audio.
OFF : To monitor normal audio.
Refer to "Function box" on page 10.

Note:

An adjustment function for audio monitor output level is not available. The output level is -10 dBs.

⑫ [DC INPUT] DC input connector (4P)

Apply 12 V DC from an AC power adapter.

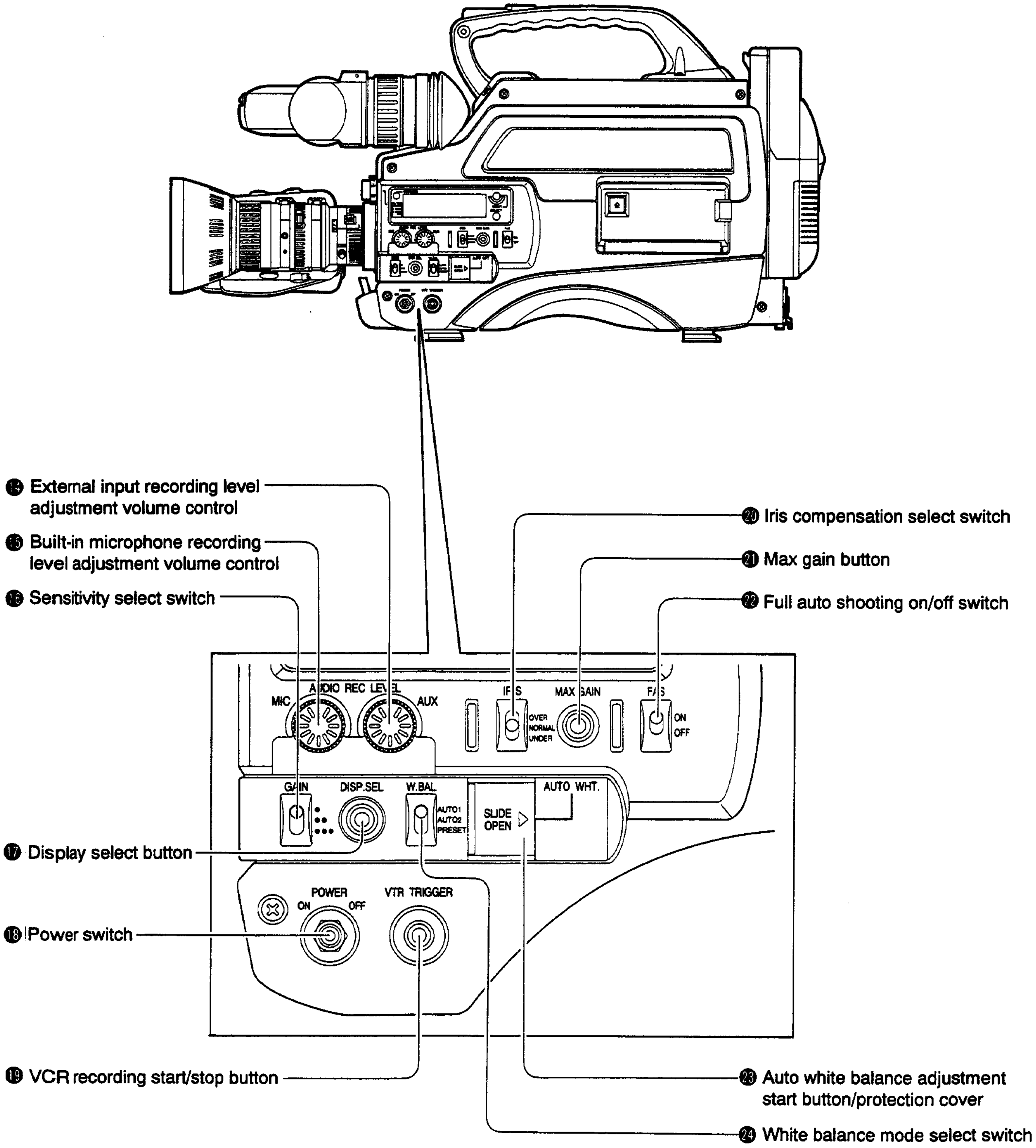
Pin No.	Function
1	GND
2	—
3	—
4	+12 V DC

⑬ [AUX INPUT] Aux audio input connector

With ㊷ [AUX INPUT LEVEL] External input level select switch, +4 dBs or -60 dBs input is available.
Refer to "Function box" on page 10.

Pin No.	Function
1	GND (Shielded)
2	HOT
3	COLD

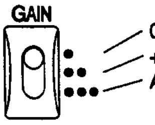
Input specifications
+4 dBs : 10-kohm balanced input
-60 dBs : 3-kohm balanced input


⑭ External input recording level adjustment volume control
⑮ Built-in microphone recording level adjustment volume control
⑯ Sensitivity select switch
⑰ Display select button
⑱ Power switch
⑲ VCR recording start/stop button
⑳ Iris compensation select switch
㉑ Max gain button
㉒ Full auto shooting on/off switch
㉓ Auto white balance adjustment start button/protection cover
㉔ White balance mode select switch
AUDIO REC LEVEL
MIC
AUX
IRIS
OVER
NORMAL
UNDER
MAX GAIN
F.A.S
ON
OFF
GAIN
DISP.SEL
W.BAL
AUTO1
AUTO2
PRESET
SLIDE OPEN
AUTO WHT.
POWER
ON
OFF
VTR TRIGGER

⑭ [AUX AUDIO REC LEVEL] External input recording level adjustment volume control
When ㊶ [AUX REC LEVEL] External input recording level select switch is set to "MANU" mode, the recording level can be adjusted with this control. Adjust the volume so that (57) Audio level meter shows the peak at 0 dB when a high-level signal is input.

⑮ [MIC AUDIO REC LEVEL] Built-in microphone recording level adjustment volume control
When ㊹ [MIC REC LEVEL] Built-in microphone recording level select switch is set to "MANU" mode, the recording level can be adjusted with this control. Adjust the volume so that (57) Audio level meter shows the peak at 0 dB when a high-level signal is input.

⑯ [GAIN] Sensitivity select switch
When the luminance of an object is insufficient, sensitivity can be increased electrically with this switch. The more the sensitivity is increased, the grainier the picture becomes.



0 dB: Normal Sensitivity.
+6 dB: Sensitivity is approximately doubled.
ALC: Sensitivity is increased autmatically.
See page 27 for more details.

⑰ [DISP. SEL] Display select button
To select the mode for display of camera operation switches and settings in the viewfinder.
Each time this button is pressed, the display mode is changed as shown below.

→ Display mode "0" → Display mode "1" → Display mode "2"

Refer to "Status display" on page 32.

⑱ [POWER] Power switch
ON: To turn the power on. When a cassette tape is loaded, the Rec Pause mode is automatically engaged.

> **Note:**
> When ⑩ [POWER SEL.] Power supply select switch on the rear panel is set to "OFF", the power cannot be turned on.

OFF: To turn the power off. For tag recording, the VCR mechanism continues to operate for several seconds before stopping, even though the power switch is set to "OFF". A slight current always flows to maintain memory circuit operation.

> **Note:**
> Do not switch [POWER] "ON" and "OFF" or "OFF" and "ON" too quikly (within 5 second) other wise, the unit may go to "Warning" mode.
> In this case, reset [POWER] switch to clear.

⑲ [VCR TRIGGER] VCR recording start/stop button
When this button is pressed in the Rec Pause mode, the VCR starts recording. When this button is pressed again, the VCR enters the Rec Pause mode.

⑳ [IRIS] Iris compensation select switch
To improve the flat black that occurs during a backlit shot or the flat white in part of an object.

- OVER: The iris opening is increased by 1/2 F stop over the reference value. Used for compensation in a backlit shot.
- NORMAL: Reference value. Normally set to this position.
- UNDER: The iris opening is reduced 1/2 F stop under from the reference value. Used to improve partial flat white of an object.

Refer to "Iris" on page 28.

㉑ [MAX GAIN] Max gain button
When this button is pressed, the sensitivity is electrically increased by +24 dBs (approximately 16 times), allowing you to shoot under illuminance as low as 4 lux with F1.4. Pressing this button again releases the Max Gain mode.
Refer to "Max gain mode" on page 34.

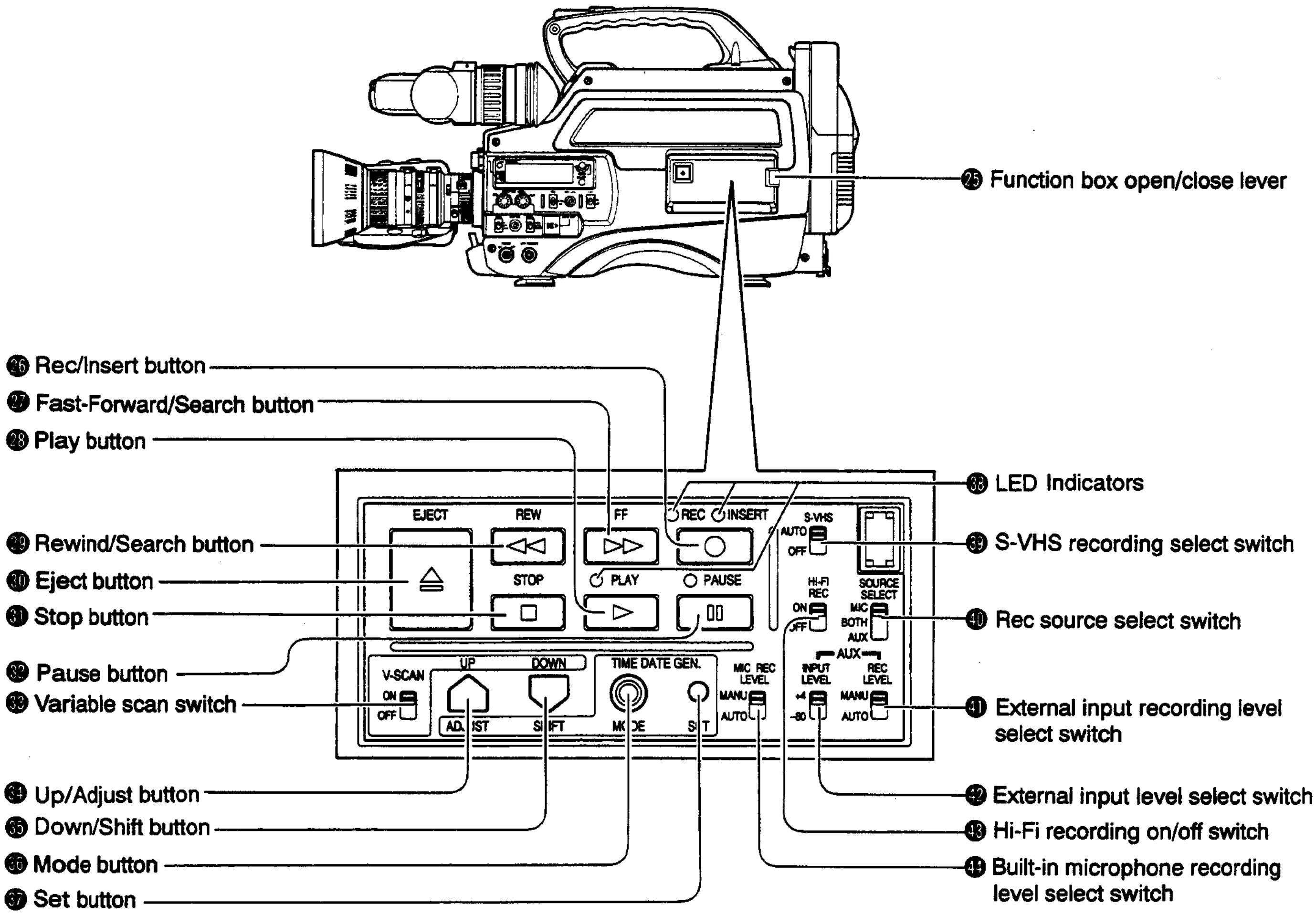
㉒ [FAS] Full auto shooting on/off switch
ON: To engage the Full Auto Shooting mode. Video ALC (Auto Level Control), EEI (Electronic Iris), auto iris, FAW (Full-time Auto White) and audio ALC (Auto Level Control) are all controlled automatically.
OFF: To release the Full Auto Shooting mode.

㉓ [AUTO WHT.] Auto white balance adjustment start button/protection cover
To start auto white balance adjustment. The button can be found by sliding the protection cover to the right.
Refer to "White balance adjustment" on page 21.

㉔ [W. BAL] White balance mode select switch

AUTO 1:	White balance is set to the memory automatically adjusted with switch ㉓ .
AUTO 2 (FAW):	White balance is controlled all the time automatically.
PRESET:	White balance is set to the preset standard (corresponding to a color temperature of 3200K).

Function box



㉕ Function box open/close lever
㉖ Rec/Insert button
㉗ Fast-Forward/Search button
㉘ Play button
㉙ Rewind/Search button
㉚ Eject button
㉛ Stop button
㉜ Pause button
㉝ Variable scan switch
㉞ Up/Adjust button
㉟ Down/Shift button
㊱ Mode button
㊲ Set button
㊳ LED Indicators
㊴ S-VHS recording select switch
㊵ Rec source select switch
㊶ External input recording level select switch
㊷ External input level select switch
㊸ Hi-Fi recording on/off switch
㊹ Built-in microphone recording level select switch
EJECT
REW
FF
REC
INSERT
S-VHS
AUTO
OFF
STOP
PLAY
PAUSE
HI-FI REC
ON
OFF
SOURCE SELECT
MIC
BOTH
AUX
V-SCAN
ON
OFF
UP
DOWN
ADJUST
SHIFT
TIME DATE GEN.
MODE
SET
MIC REC LEVEL
MANU
AUTO
AUX
INPUT LEVEL
+4
-60
REC LEVEL
MANU
AUTO

㉕ Function box open/close lever
To open the function box, pull this lever towards you. To close it, push this lever towards the unit. This function box is attached with a magnet.

㉖ [REC-INSERT] Record/Insert button

- Assemble Record
  Press together with the PLAY button ㉘ to engage the Assemble Record mode, REC and PLAY LED indicators light. Press the STOP button to stop recording. To temporarily stop recording, press the PAUSE button. To re-start recording from the Record-Pause mode, press the PLAY button. ㉘ .
- Pressing only this button engages the Record-Pause mode.
- When using this button as a Record/Insert button, follow the procedures shown in "Insert recording" on page 29.

㉗ [FF] Fast-Forward/Search button
Press to fast-forward the tape. When pressed while in the Play mode, forward search at 5 times normal speed is engaged.
If this button is pressed and held in the Record-Pause mode, the tape is played back for review in the forward direction at normal speed.

㉘ [PLAY] Play button
Press to paly back the tape. PLAY LED indicator lights while playback operation takes palce.
If it is Record-Pause mode, and press PLAY button, the VTR go to "REC" mode.

㉙ [REW] Rewind/Search button
Press to rewind the tape. When pressed while in the Play mode, reverse search ast 5 times normal speed is engaged.
If this button is pressed and held in the Record-Pause mode, the tape is played back for review in the reverse direction at normal speed.

㉚ [EJECT] Eject button
Press to eject the cassette. It will take about 10 seconds for the tape to be unloaded and the cassette ejected. Press this button only when the unit is in the Record-Pause and Stop mode.
The cassette cannot be ejected if the power supply is insufficient (too low or no battery power). In such a case, replace the battery pack with a charged one.
The EJECT button can be pressed even when theVTR section is covered.

㉛ **[STOP] Stop button**
Press to stop the tape.

㉜ **[PAUSE] Pause/still button**
Press to stop the tape temporarily. When pressed during Play, a still picture is shown. Repeated pressing starts frame-by-frame playback. Pressing this button in the Rec mode engages the Rec Pause mode.

> **Note:**
> To fast-forward, rewind or play the tape in the Rec Pause mode, first press the Stop button to enter the Stop mode.

㉝ **[V-SCAN] Variable scan switch**
ON: To engage the Variable Scan mode.
OFF: To engage the normal mode.
Refer to "Variable scan" on page 30.

㉞ **[UP/ADJUST] Up/adjust button**
This button has a different function depending on whether the unit is in the Variable Scan mode or the Time/Date Generator mode. (Press once to display current value)
Variable Scan mode: (UP) Press to increase shutter speed.
Time/Date Generator mode: (ADJUST) Press to change the numeric value and select the display.
Refer to "Recording shooting date/time" on page 26, and "Variable Scan" on page 30.

㉟ **[DOWN/SHIFT] Down/shift button**
This button has a different function depending on whether the unit is in the Variable Scan mode or the Time/Date Generator mode. (Press once to display current value)
Variable Scan mode: (DOWN) Press to decrease shutter speed.
Time/Date Generator mode: (SHIFT) Press to change settings.
Refer to "Recording shooting date/time" on page 26, and "Variable Scan" on page 30.

㊱ **[MODE] Mode button**
Press this button to record the shooting date/time.
Pressing this button inserts the date and time in the recorded image. Each time this button is pressed, the display mode is changed.

→ Date and time → Date only → Time only → No indication ↵

Refer to "Recording shooting date/time" on page 26.

㊲ **[SET] Set button**
Press to set the date and time for the time/date generator.
After setting, press this button.
Refer to "Recording shooting date/time" on page 26.

㊳ **LED indicators**
Lights to show corresponding operation status.

㊴ **[S-VHS] S-VHS recording select switch**
Selects the S-VHS or VHS recording.
AUTO: Recording mode is automatically selected according to the cassette used. S-VHS is selected with an S-VHS cassette and VHS with a VHS cassette.
OFF: Set to this position to record in VHS regardless of the cassette used.

㊵ **[SOURCE SELECT] Rec source select switch**
To select the inputs to be recorded on the Hi-Fi and normal audio tracks.

Source select switch	Normal audio recording	Hi-Fi audio recording	
		CH-1	CH-2
MIC	MIC	MIC	MIC
BOTH	MIC + AUX	MIC	AUX
AUX	AUX	AUX	AUX

MIC: Built-in microphone input
AUX: External audio input

㊶ **[AUX REC LEVEL] External input recording level select switch**
To select automatic or manual recording level adjustment of externally input audio.
MANU: To adjust the Hi-Fi and normal audio recording level with ⑭ AUX recording level adjustment volume control.
AUTO: The AUX recording level adjustment volume control does not function. The recording level is automatically adjusted.

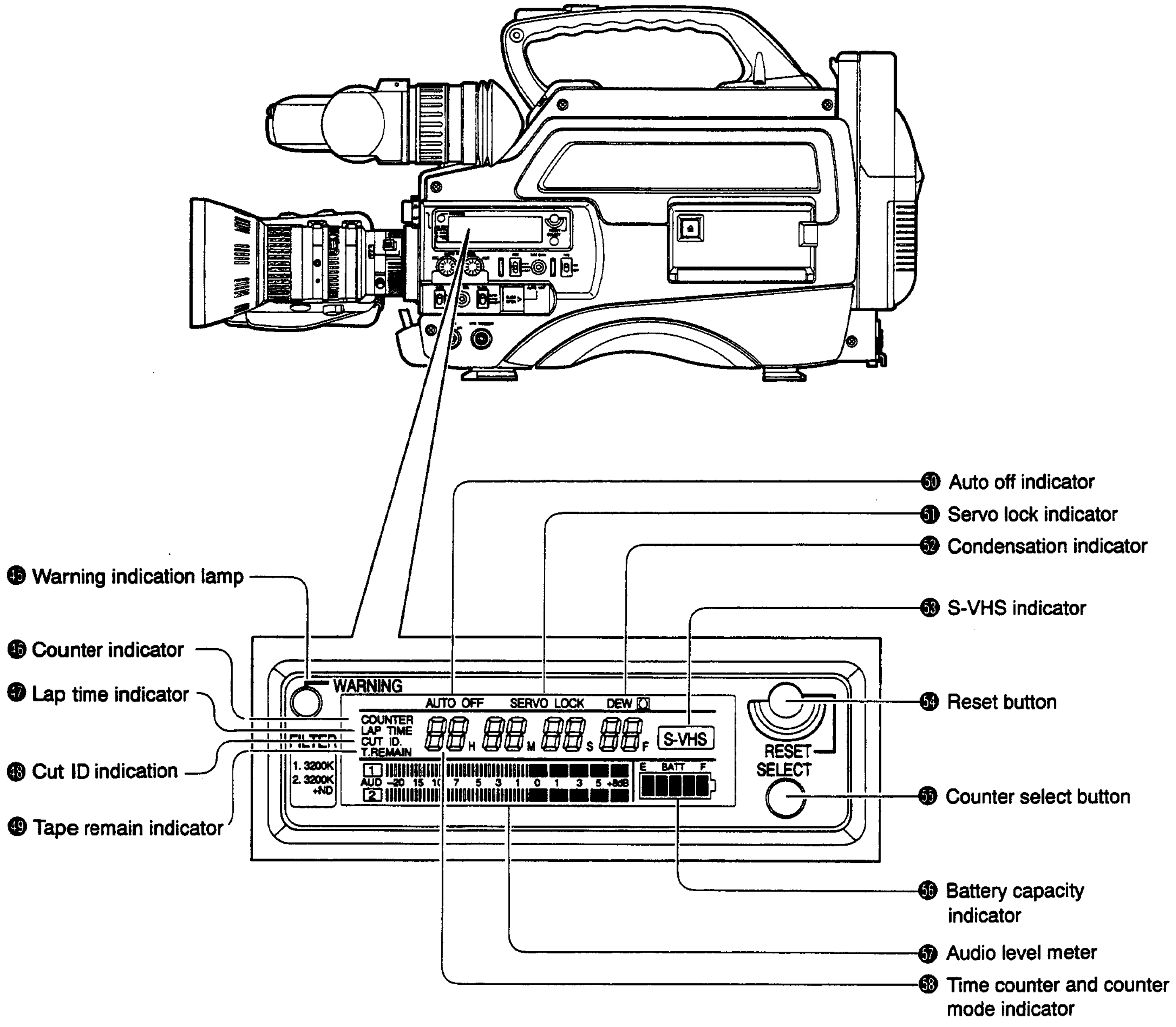
> **Note:**
> As the automatic system adjusts the level automatically based on the mean value of the input level, this system cannot adjust to sudden level changes.

㊷ **[AUX INPUT LEVEL] External input level select switch**
To select the external input audio level.
+4: For +4 dB line level input.
-60: For -60 dB microphone level input.

㊸ **[Hi-Fi REC] Hi-Fi recording switch**
ON: To record Hi-Fi audio. Hi-Fi audio system is selected for the audio monitor output terminal on the rear panel and the audio meter in the LCD display.
OFF: Hi-Fi audio is not recorded.

㊹ **[MIC REC LEVEL] Built-in microphone recording level select switch**
To select manual or automatic recording level adjustment for the built-in microphone.
MANU: To adjust the Hi-Fi and normal audio recording level with ⑮ microphone recording level adjustment volume control.
AUTO: The microphone recording level adjustment volume control does not function. The recording level is automatically adjusted.

LCD display



㊺ Warning indication lamp
㊻ Counter indicator
㊼ Lap time indicator
㊽ Cut ID indication
㊾ Tape remain indicator
㊿ Auto off indicator
(51) Servo lock indicator
(52) Condensation indicator
(53) S-VHS indicator
(54) Reset button
(55) Counter select button
(56) Battery capacity indicator
(57) Audio level meter
(58) Time counter and counter mode indicator
WARNING
AUTO OFF
SERVO LOCK
DEW
COUNTER
LAP TIME
CUT ID.
T.REMAIN
H
M
S
F
S-VHS
FILTER
1. 3200K
2. 3200K +ND
1
AUD -20 15 10 7 5 3 1 0 1 3 5 +8dB
2
E BATT F
RESET
SELECT

㊺ [WARNING] Warning indication lamp

Lights or blinks to indicate VCR servo lock defect, auto off, moisture condensation, tape near end, and tape end.
Refer to "Warnings" on page 37.

㊻ [COUNTER] Counter indicator

Appears when the counter display (58) is in the Counter mode.

㊼ [LAP TIME] Lap time indicator

Appears when the counter display (58) is in the Lap time mode.

㊽ [CUT ID] Cut ID indicator

Shown when the cut ID mode is shown in the counter display section.

㊾ [T. REMAIN] Tape remain indicator

Appears when the counter display (58) is in the Remaining tape time mode.

㊿ [AUTO OFF] Auto off indicator

Shown when an abnormality occurs in the drum, capstan, reel rotation, or mechanism position.
Refer to "Warnings" on page 37.

(51) [SERVO LOCK] Servo lock indicator

Shown when the drum servo and capstan servo are not locked with video signals during recording.
Refer to "Warnings" on page 37.

(52) [DEW] DEW indicator

Appears when condensation occurs. At this time, no operation but ejection is possible. Wait for a few hours until the indicator goes off.
Refer to "Moisture condensation" on page 4, and "Warnings" on page 37.

(53) [S-VHS] S-VHS indicator

Appears when recording or playback in the S-VHS mode is engaged.

(54) [RESET] Reset button

Press to reset the tape counter/lap time/cut ID.

(55) [SELECT] Counter select button

Each time this button is pressed, the display changes as follows.

→COUNTER→LAP TIME→CUT ID
T. REMAIN←

COUNTER: 4-digit tape counter reading

LAP TIME: The lap time counter is shown with hours, minutes and seconds. (Counting starts only in the Rec or Play mode. In the FF/REW mode, time counting does not operate.)
Time data (hours, minutes, seconds) is automatically recorded on the tape as CTL timecode data.

CUT ID: The numbers of each recording cut are counted and recorded on the tape as CTL time code data. Counts up to 9999.

T. REMAIN: Remaining tape time in hours and minutes, in 1 minute increments.
For hour meter display, unload the cassette and press SELECT and REC simultaneously, Hold for about 3 seconds. The display will cahnge to the hour meter reading.

See "Hour Meter Display" in page 31.

(56) [BATT] Battery capacity indicator

Battery capacity is shown in 5 steps. When the battery is fully charged, all LCDs are lit. When only 2 LCDs are lit, replace the battery with a new one.

(57) Audio level meter indicator

Shows the Hi-Fi or normal audio level (as selected with the [Hi-Fi REC] switch in the function box) during recording and playback. 0 dB is the reference level.

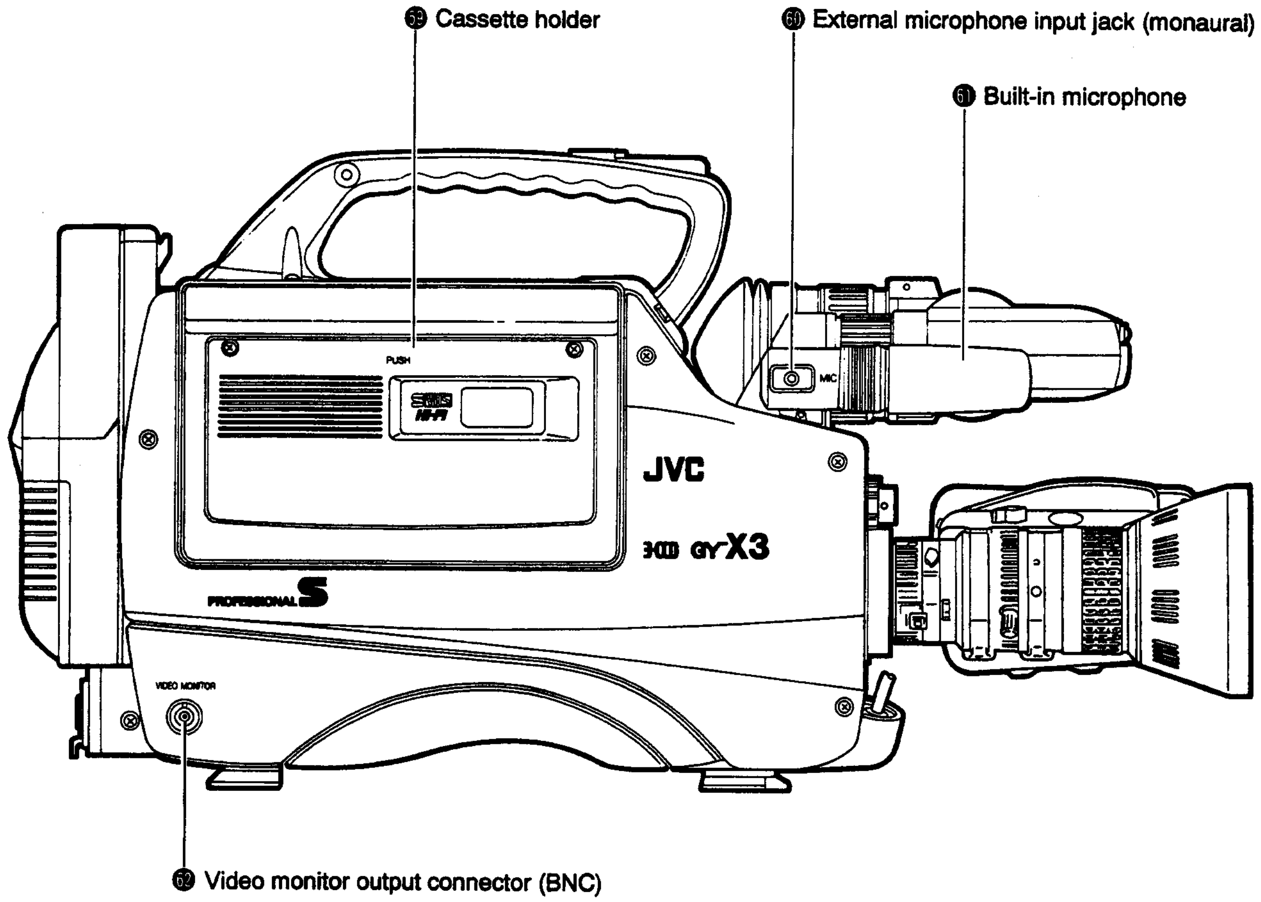
[Hi-Fi REC] switch

ON: Shows Hi-Fi audio level.
OFF: Shows normal audio level.

Refer to "Switch setting and audio level adjustment" on page 22.

(58) Counter display

Shows tape counter/lap time/cut ID/tape remaining time/hour meter.


(59) Cassette holder
(60) External microphone input jack (monaural)
(61) Built-in microphone
PUSH
S-VHS
HI-FI
MIC
JVC
3CCD GY-X3
PROFESSIONAL S
VIDEO MONITOR
(62) Video monitor output connector (BNC)

(59) Cassette holder
Refer to "loading/eject" on page 18.

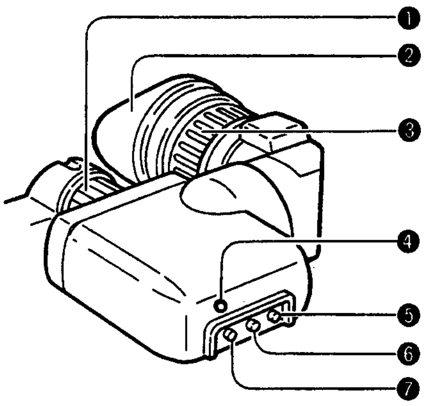
(60) [MIC] External microphone input jack (monaural)
To connect an external microphone.
Use a monaural microphone with 3.5-dia. plug and sensitivity of around -70 dBs. The microphone input is unbalanced at approx. 4.7 kohms. When an external mic is connected, the built-in microphone is automatically switched off.

Note:
When using a dynamic microphone, keep it away from the viewfinder to avoid recording of camera noise.

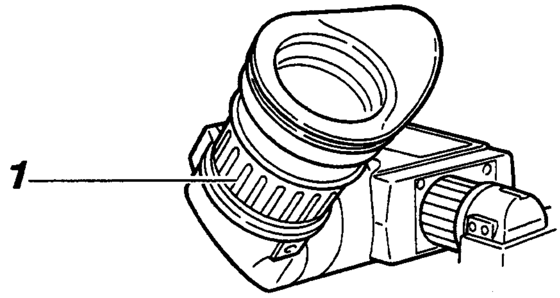
(61) Built-in microphone
Superdirectional electret condenser microphone.

(62) [VIDEO MONITOR] Video monitor output connector
In the Play mode, playback signals are output. In other modes, camera-through signals are output. Signals are composite video signals which should be terminated at 75 ohms.

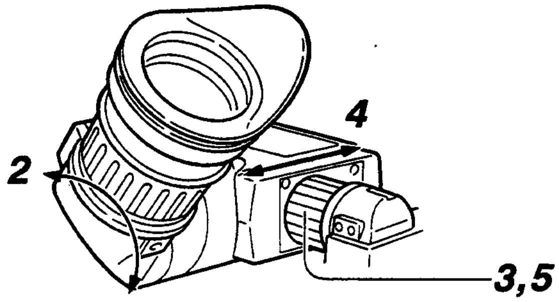
Viewfinder



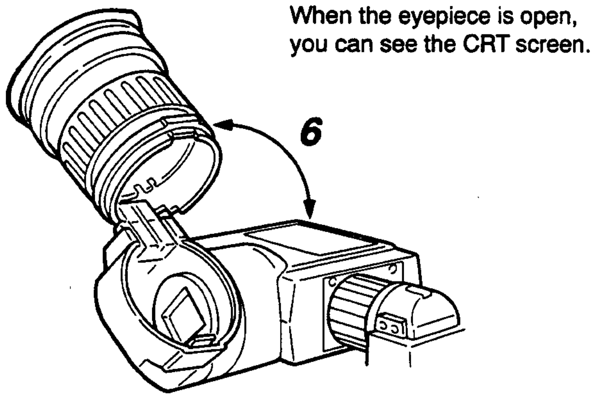
• Viewing angle (focus) adjustment



• Up-and-down angle and horizontal slide adjustment



• Eyepiece open/close


When the eyepiece is open, you can see the CRT screen.

The GY-X3's built-in electronic viewfinder uses a 1.5-inch black-and-white CRT. Viewing angle, focus and iris of an object can be checked. Camera and VCR status, settings and various warning indicators can be checked with the character display.

❶ Slide fixing ring

❷ Eyepiece

❸ Eyepiece focusing ring

❹ Tally lamp
When recording, this lights up (blinks until recording starts).
When warning, this blinks to inform of abnormality.

❺ [BRIGHT] Brightness adjustment device
Adjusts image brightness to the optimum level.

❻ [CONT] Contrast adjustment device
Adjusts image contrast to the optimum level.

❼ [TALLY] Tally switch
ON: The tally lamp operates.
OFF: The tally lamp does not operate.

• Viewing angle (focus) adjustment

1. Turn this ring until it reaches a position where the image in the viewfinder can be seen clearly.

• Up-and-down angle and horizontal slide adjustment

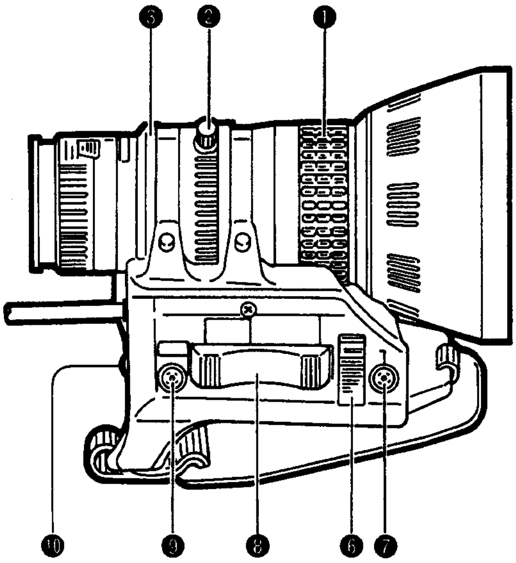
2. Adjust the up-and-down angle of the eyepiece.
3. Loosen the ring.
4. Move it to the left and right to set it to the required position.
5. Secure the ring.

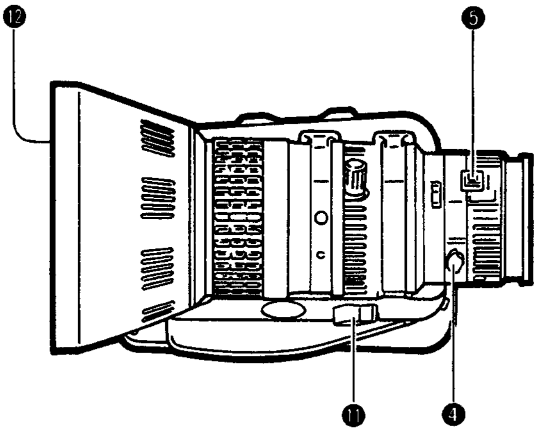
• Eyepiece open/close

6. Hold up the ring of the eyepiece.

Notes:
Do not use any viewfinder other than the one provided with this unit.

Zoom lens





❶ **FOCUS ring**
Manual focus ring. Focus distance indicated.

❷ **ZOOM lever/ring**
Manual zoom ring with lever.
Deactivate servo zoom with knob ⓫ .
Lens zoom length is indicated.

❸ **IRIS ring**
Manual iris ring.
Deactivate auto iris with switch ❻ .

Notes:
In the Auto Iris mode, do not apply excessive force to turn this ring.

❹ **BACK FOCUS ring**
For set-up back focus adjustment only.
Secure with the screw knob.
See page 20 for adjustment.

❺ **MACRO lever/ring (for close-up)**
When this ring is turned in the direction shown by the arrow, close-up shooting of extremely small objects is possible. In the Macro mode, ordinary focus adjustment and zoom shooting are not possible.
For macro shooting, set the focus ring to the infinite position and the zoom ring to the widest position.
To adjust the focus, push the macro lever to the camera and turn the macro ring in the direction shown by the arrow to focus on an object. The focus range is within 10 cm of the lens surface.

❻ **IRIS MODE switch**
A : Auto iris On and Remote operation
M : Manual iris operation

❼ **MOMENTARY AUTO IRIS button**
In manual iris mode (M), pushing this button activates the auto iris function while it is held down only.

❽ **ZOOM SERVO control**
Pushing this lever in the W direction makes the lens move wider.
Pushing this lever in the T direction makes the lens move tighter.
Pushing harder changes the speed of the zoom. Turn this lever on with switch ⓫ .

❾ **RETURN (RET) switch**
- Pressing this button i the Record-Pause mode activates Auto Review. The tape rewinds for a few seconds, then automatically plays back the rewound portion and re-enters the Record-Pause mode at the same point. Useful for checking the tape section just recorded.
This function work only one time after become "REC-Pause" mode to keeputape position accuracy.
- This switch has no effect during record mode.

❿ **VTR trigger switch**
To start shooting push once.
To stop shooting push again.

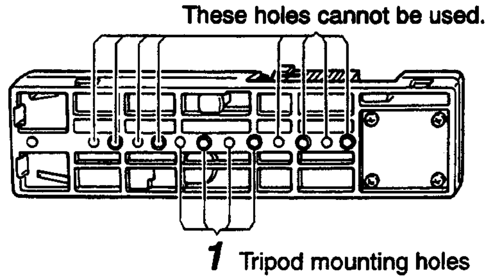
⓫ **ZOOM MODE knob**
S : Servo zoom on
M : Manual zoom mode

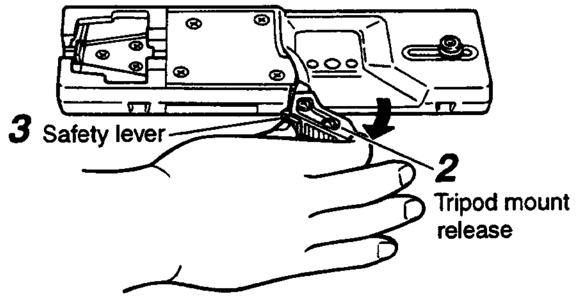
⓬ **FILTER mount screw**
Mount a transparent or UV filter for lens protection by screwing this screw into the lens hood's inner groove, or the front of the lens.
Special-effect filters can also be used.
Filter diameter:
- Lens front : 62 mm, 0.75 mm pitch

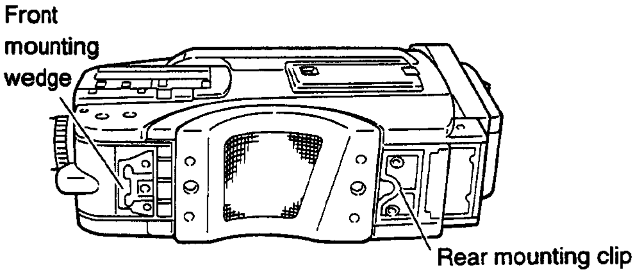
Notes:
Do not use any lens other than the one provided with this unit.

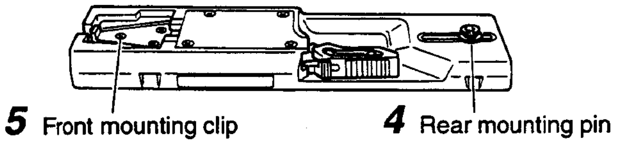
PREPARATIONS BEFORE USE

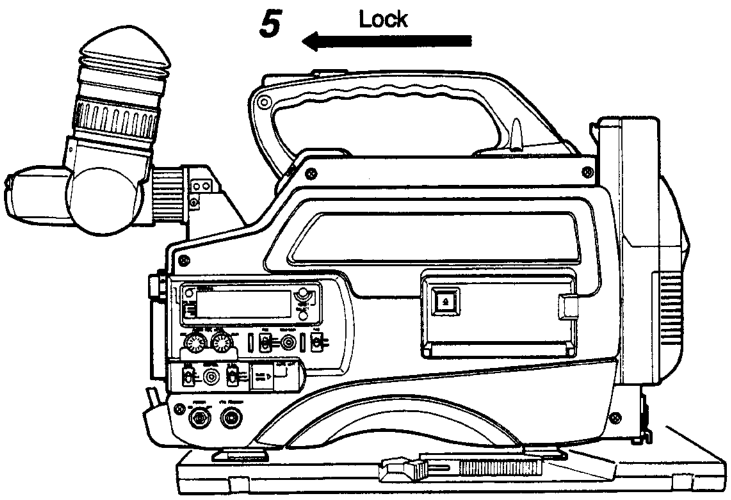
Tripod mounting


These holes cannot be used.
1 Tripod mounting holes


3 Safety lever
2
Tripod mount release


Front mounting wedge
Rear mounting clip


5 Front mounting clip
4 Rear mounting pin



The Tripod Base included with the camera must be used to secure the camera to a tripod or camera stand.

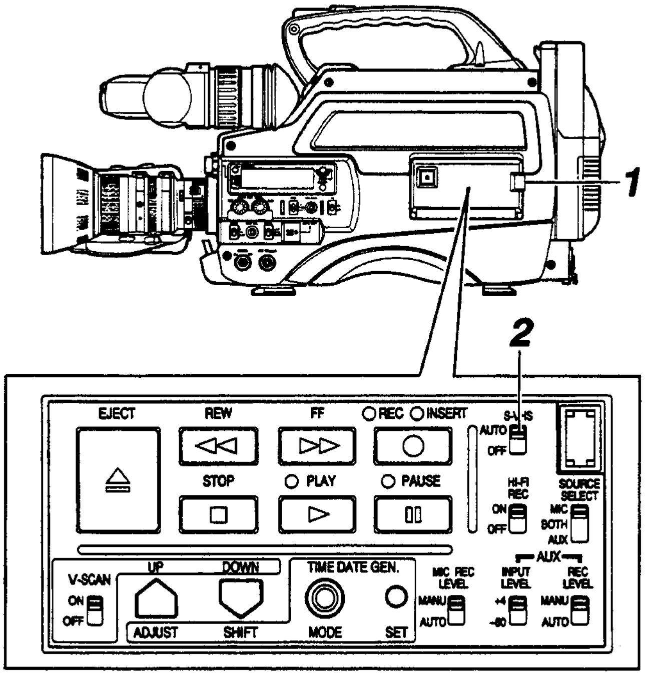
1. **Tripod mounting holes**
   Match a 3/8 or 1/4 inch tripod mounting screw to the best hole for good balance.
2. **Tripod mount release**
   Pull back once to activate the front clip before mounting the camera.
3. **Safety lever**
   Prevents accidental release. If the camera is secured in the Base, this release lever must be pushed in order to pull the release lever and open the Base.
4. **Rear mounting pin**
   Make sure the rear mounting clip of the camera is firmly on the Tripod Base, so that the rear mounting pin can be engaged porperly.
5. **Front mounting clip**
   Makig sure the rear mounting pin engages, slid the front mounting wedge on the camera into the front mounting clip of the base until it engages automatically with a clik. The front clip will hold the camera safely, but without engaging the rear clip, the camer will tend to move slightly in the Base.

Notes:

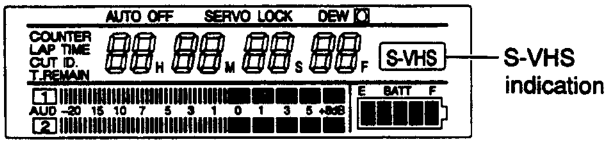
Mounting error

Double check that the rear pin is engaged properly.
The front clip will hold the camera safely, but without engaging the rear clip, the camera will tend to move slightly in the Base.

Video cassettes


1
2
EJECT
REW
FF
REC
INSERT
S-VHS
AUTO
OFF
STOP
PLAY
PAUSE
HI-FI REC
ON
OFF
SOURCE SELECT
MIC
BOTH
AUX
V-SCAN
ON
OFF
UP
DOWN
ADJUST
SHIFT
TIME DATE GEN.
MODE
SET
MIC REC LEVEL
MANU
AUTO
INPUT LEVEL
+4
-60
REC LEVEL
MANU
AUTO

LCD display section


AUTO OFF
SERVO LOCK
DEW
COUNTER
LAP TIME
CUT ID.
T.REMAIN
H
M
S
F
S-VHS
S-VHS indication
AUD -20 15 10 7 5 3 1 0 1 3 5 +8dB
E BATT F
1
2

Usable video cassettes

- Use only cassettes bearing the S-VHS or VHS mark.
- Video cassettes recorded in the S-VHS mode cannot be played back in a VHS VCR.

Notes:

- Use of a T-180 cassette is not recommended because the tape could be damaged if used in this unit.
- Do not use the C-size cassette with adapter because the tape edge may be damaged during search.

S-VHS mode

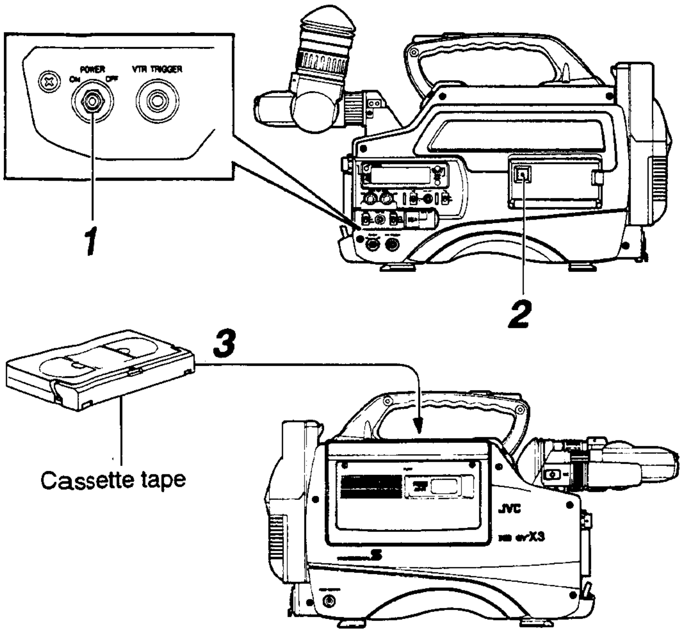
Setting the S-VHS/VHS mode switch

1. Open the function box cover by pushing the unlock lever.
2. Set the S-VHS switch as required.

S-VHS mode : Set switch to AUTO.
VHS mode : Set switch to OFF.

- S-VHS recordings are not possible with VHS cassettes. The VHS mode will be automatically selected.
- VHS mode will record on S-VHS tapes in VHS mode.
- Playback mode is automatic — No switch change.
- S-VHS indicator light
  S-VHS ON : Steady light

Loading, ejecting


POWER
ON
OFF
VTR TRIGGER
1
2
3
JVC

Cassette tape

1. Set the POWER switch to "ON".
2. Press the EJECT button to open the cassette holder.
3. Insert a cassette. Make certain before loading the cassette that the tape is not slack. Close the cassette holder slowly. When ejecting a cassette, first engage the Stop or Recor-Pause mode, then press the EJECT button. It takes approximately 10 seconds to eject in the Record-Pause mode because the process starts from the fully-loaded tape position.

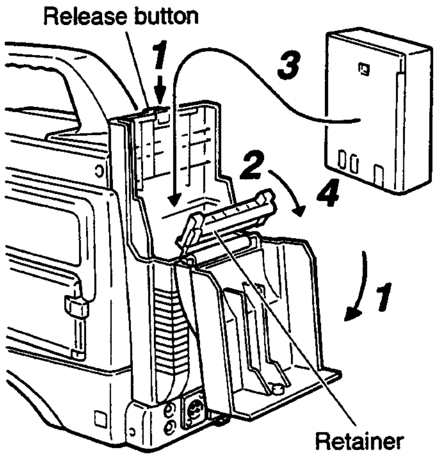
Ejection is not possible when the power is off.

Power supply

NB-G1 (JVC) or Flat shape type BATTERY PACK

To install the battery pack

1. Open the cover while pressing the buttons.
2. Swing out the battery retainer.
   (For Flat shape type, leave the retainer in place.)
3. Install the battery pack with its terminals facing the camera. (The illustration shows an NB-G1 battery pack.)
4. Replace the battery retainer and close the cover.

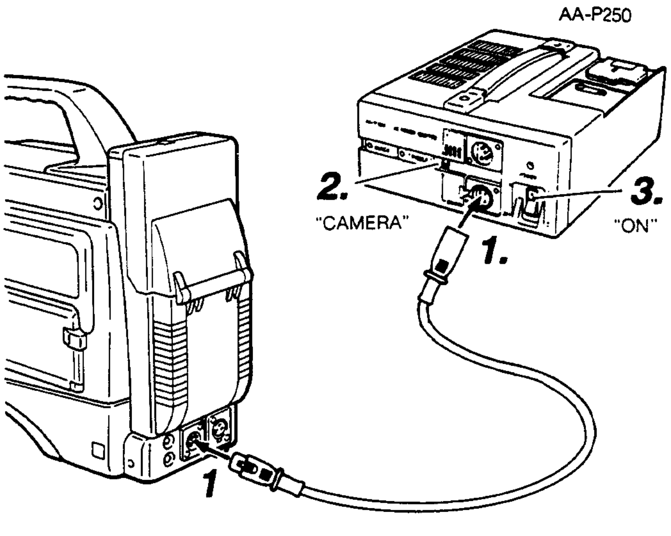


Operating time
A fully changed battery pack offers the following continuous operating time at 25°C:
NB-G1 : Approx. 40 minutes
The operating time may be shorter than this depending on the battery storage condition and ambient temperature.

- Before recording, charge the battery pack. It is recommended that several charged battery packs are kept at hand as spares.
- To charge the battery pack, use an optional AC power adapter. For the charging procedure refer to the instruction manual of the optional AC power adapter.
- The battery condition can be checked on the viewfinder screen. (See page 33.)
- When the battery pack is becoming low, a warning indicator appears. (See page 13.) When this indicator is seen, replace the battery pack with a charged one.
- Do not leave the battery pack in a place subject to high temperatures, as this could damage it and make it unusable.

AA-P250 AC POWER ADAPTER

1. Connect the camera head to the AC power adapter using the cable provided with the AC adapter.
2. Set the switch to CAMERA.
3. Set the POWER switch of the AC power adapter to ON.

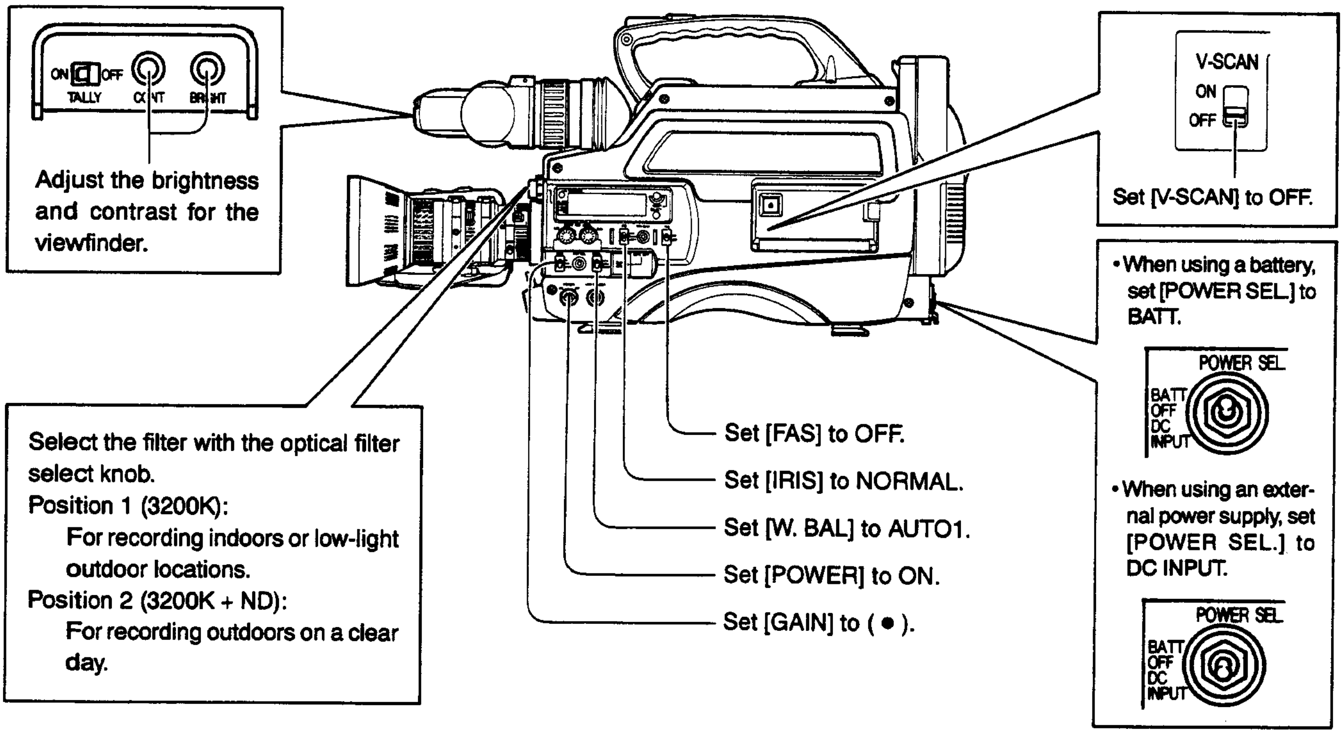


Do not use power units other than specified, otherwise the recorder may stop due to a temporary drop in power because of the operation of the protective circuit.

ADJUSTMENTS BEFORE SHOOTING (CAMERA SECTION)

Preliminary adjustments

Turn the power on and set the controls as desired.



Adjust the brightness and contrast for the viewfinder.

Set [V-SCAN] to OFF.

- When using a battery, set [POWER SEL.] to BATT.
- When using an external power supply, set [POWER SEL.] to DC INPUT.

Select the filter with the optical filter select knob.
Position 1 (3200K):
For recording indoors or low-light outdoor locations.
Position 2 (3200K + ND):
For recording outdoors on a clear day.

Set [FAS] to OFF.
Set [IRIS] to NORMAL.
Set [W. BAL] to AUTO1.
Set [POWER] to ON.
Set [GAIN] to (●).

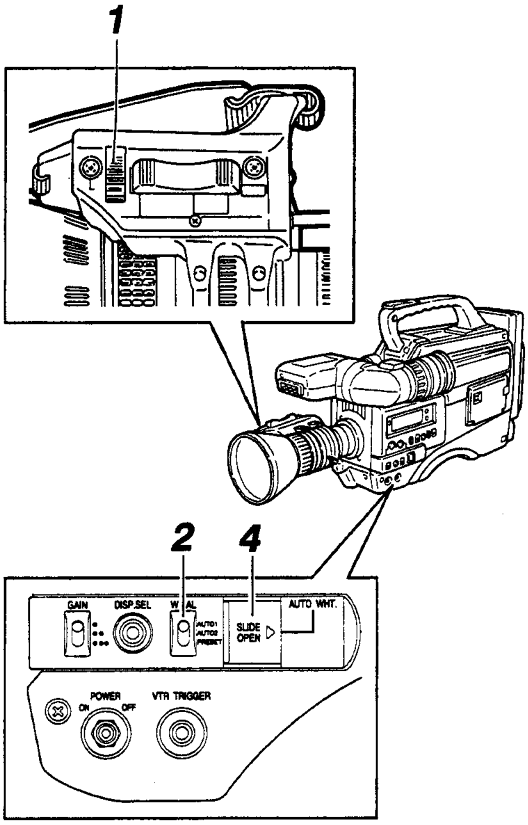
Back focus adjustment

It is only necessary to perform this only when focusing is not correct in both the Telephoto and Wide-angle positions.
Adjust the viewfinder for sharpness first.
It is easier to adjust back focus when the subject is more than 3 meters from the subject.

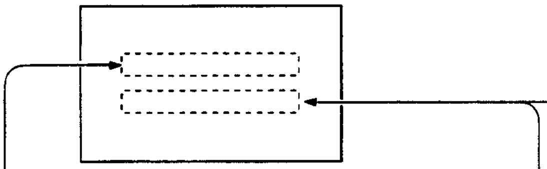
1. Set the Iris mode to M (Manual).
2. Set the Zoom mode to M (Manual).
3. Open the Iris ring to F1.4. If the illumination is too strong, reduce it or move to a darker place.
4. Turn the zoom lever until the lens in completely telephoto.
5. Focus on the subject. There is a specific chart that looks like a dart board which is helpful.
6. Set the lens to completely Wide-angle.
7. Loosen the back focus ring retaining knob.
8. Adjust the back focus ring for the best possible focus.
9. Repeat steps 4 through 8 for fine adjustment.
10. Tighten the back focus ring retaining knob to secure the ring.

White balance adjustment

White balance adjustment is required only before recording and when the light source for an object is changed during recording.



5. Viewfinder screen



Adjustment contents
- AUTO WHITE1 (Auto White AUTO1 mode)

Adjustment process
- OPERATION (Adjustment is being executed)
- COMPLETED (Adjustment is complete)

Procedures (perform immediately after the previous item "Preliminary adjustments")

1. Set the Iris mode switch to "A".
2. Set the White Balance mode select switch to "AUTO1". In the Preset mode, this function is not effective.
3. Shoot a white object (white paper, etc.) in a full screen.

Note:
When a white cloth with color development processing is used, an error may occur for auto white adjustment, resulting in incorrect white balance being obtained.

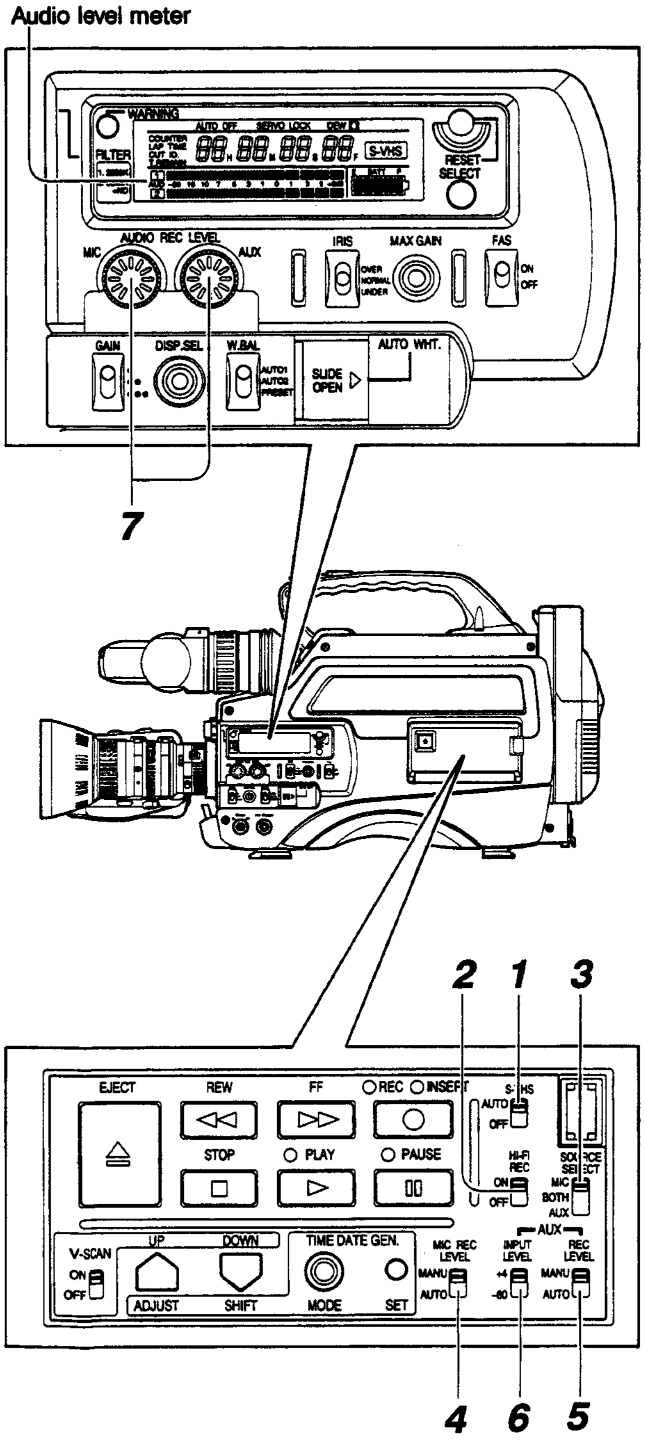
4. Slide the auto white switch cover to the right and press the button inside. (Keeping the button pressed is not necessary.)
5. During the adjustment, a message showing the progress of adjustment is shown in the viewfinder.
6. After the adjustment is complete, slide the cover to the left to avoid misoperation.

Notes:
Error message (shown if the unit is out of order)
Check the cause and adjust the unit again.

- LOW LIGHT ERROR
  - Cause : Insufficient lighting.
  - Check : Increase the amount of light (illumination) or increase the sensitivity with the GAIN switch. (When the sensitivity is increased, S/N becomes lower.)
- OBJECT ERROR
  - Cause : The object being shot is inappropriate.
  - Check : Check if the object is white or not. Use a different object if necessary.
- OVER LIGHT ERROR
  - Cause : The amount of incidental light is too high. The optical filter is inappropriate.
  - Check :
    1. Check if the sun or other bright light enters the image screen directly or is being reflected from the object.
    2. Set the optical filter to position 2.

ADJUSTMENTS BEFORE SHOOTING (VCR SECTION)

Switch setting and audio level adjustment


Audio level meter
WARNING
FILTER
AUTO OFF
SERVO LOCK
COUNTER
S-VHS
RESET
SELECT
AUDIO REC LEVEL
MIC
AUX
IRIS
MAX GAIN
FAS
OVER
NORMAL
UNDER
ON
OFF
GAIN
DISP.SEL
W.BAL
AUTO1
AUTO2
PRESET
AUTO WHT.
SLIDE OPEN
7
2
1
3
EJECT
REW
FF
REC
INSERT
S-VHS
AUTO
OFF
STOP
PLAY
PAUSE
HI-FI REC
ON
OFF
SOURCE SELECT
MIC
BOTH
AUX
V-SCAN
ON
OFF
UP
DOWN
ADJUST
SHIFT
TIME DATE GEN.
MODE
SET
MIC REC LEVEL
MANU
AUTO
AUX
INPUT LEVEL
+4
-60
REC LEVEL
MANU
AUTO
4
6
5

- Set the switches as required.

1. Recording mode setting
Set correctly according to the Recording mode with the S-VHS recording select switch.
Refer to "Video cassette preparations" on page 18.

2. Hi-Fi audio recording setting
Set with the Hi-Fi REC on/off switch.
ON : To record Hi-Fi audio. (Audio meter and audio monitor are set for Hi-Fi audio track monitoring.)
OFF : Hi-Fi audio is not recorded. (Audio meter and audio monitor are set for normal audio track monitoring.)

3. Recording source setting
Select the settings as required by referring to the table below.

Source select switch	Normal audio recording	Hi-Fi audio recording	
		CH-1	CH-2
MIC	MIC	MIC	MIC
BOTH	MIC + AUX	MIC	AUX
AUX	AUX	AUX	AUX

MIC: Built-in microphone input AUX: External audio input

4. Setting the built-in microphone recording system
Set with the recording level select switch.
MANU : To adjust the Hi-Fi and normal audio recording level with the recording level adjustment volume control.
AUTO : The recording level is automatically adjusted. Therefore, "7. Recording level adjustment" is not possible.

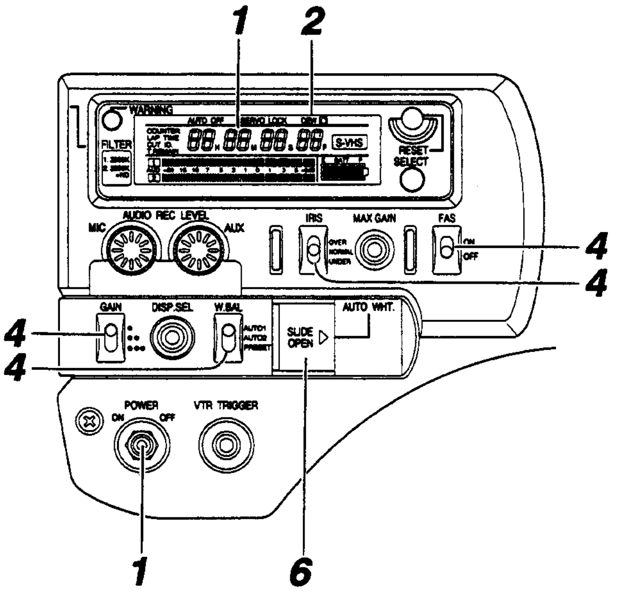
5. Setting the external input recording system
Set with the recording level select switch.
MANU : To adjust the Hi-Fi and normal audio recording level with the recording level adjustment volume control.
AUTO : The recording level is automatically adjusted. Therefore, "7. Recording level adjustment" is not possible.

6. External input level setting
Set with the input level select switch.
+4 : For +4 dBs line input.
-60 : For -60 dBs mic input.

7. Recording level adjustment
When the recording level select switch is set to "MANU", set the recording level with the recording level Potentiometer so that the peak of the audio level meter is around 0 dB.
MIC : The recording level Potentiometer for the built-in microphone.
AUX : The recording level Potentiometer for an external input.

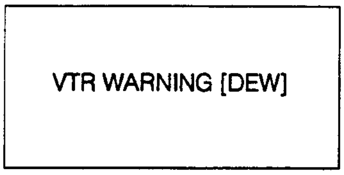
SHOOTING OPERATION

Normal operation


1
2
WARNING
FILTER
S-VHS
RESET
SELECT
AUDIO REC LEVEL
MIC
AUX
IRIS
MAX GAIN
FAS
ON
OFF
4
4
GAIN
DISP.SEL
W.BAL
AUTO WHT.
SLIDE OPEN
4
4
POWER
ON
OFF
VTR TRIGGER
1
6

1. Press the [POWER] Power switch to ON.
The power is supplied to this unit and the backlight of the LCD display is lit.

2. Make sure that the "DEW" (moisture condensation) warning indication is off. If it is on, wait until it goes off. When moisture condensation occurs, the warning indication appears on the viewfinder screen.



VTR WARNING [DEW]

Viewfinder indication

3. Insert a video cassette.
See "Loading, Ejecting" on page 18.

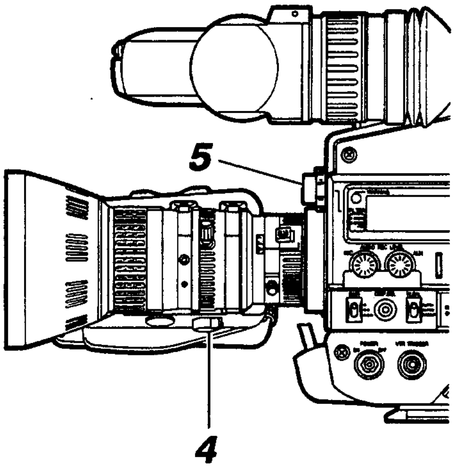
4. Perform switch settings.
- [GAIN] : Set to the sensitivity suitable to the luminance of an object.
- [W-BAL] : "AUTO 1".
- [IRIS] : "NORMAL".
- [FAS] : "OFF".
- Set the Iris mode switch for the lens to "A".
- Set the Zoom mode knob for the lens to "S".

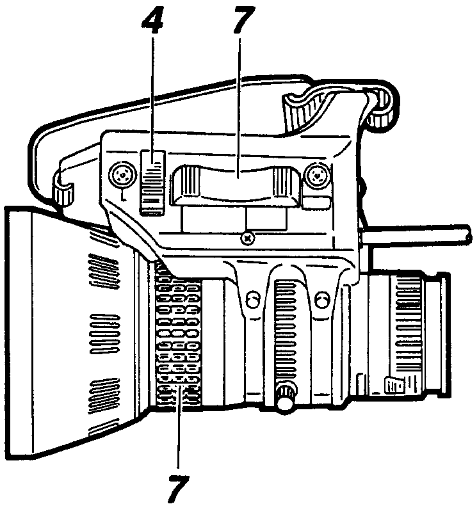
5. Select the filter according to the lighting condition.

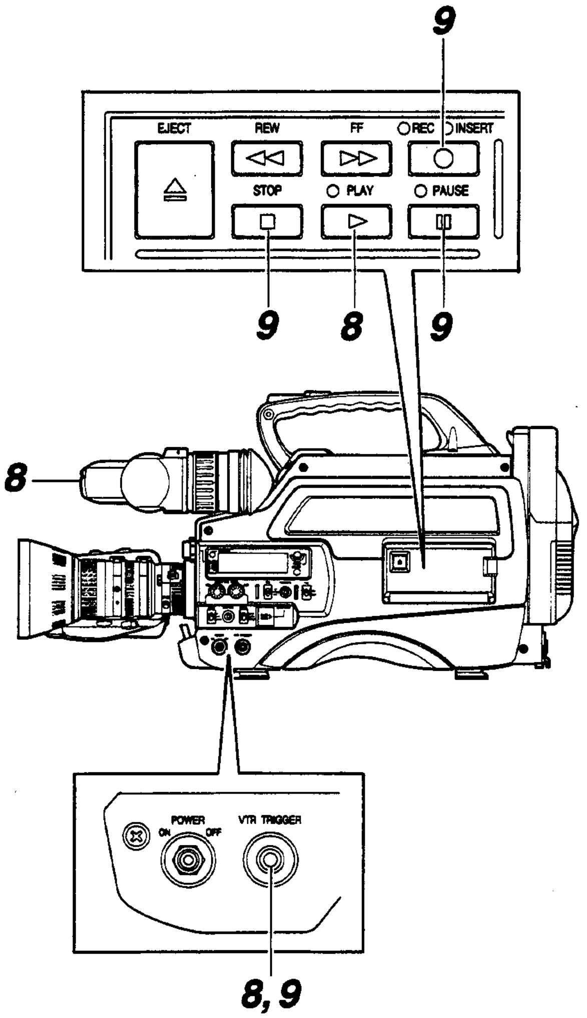
Position 1 (3200K)	: For shooting indoors or outdoors when illumination is not sufficient
Position 2 (3200K + ND)	: For shooting outdoors on a sunny day

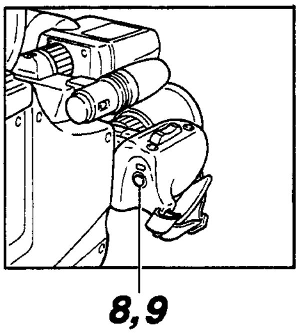
6. Adjust the white balance. (See page 21.)

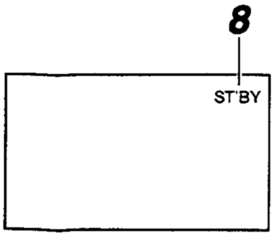
7. Point the camera at an object and set the viewing angle and focus with the zoom servo control lever and focus ring for the lens.



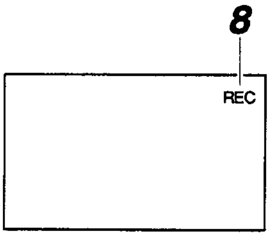








Viewfinder screen



Viewfinder screen

8. After checking the "STBY" indication in the viewfinder, press either one of the following buttons to start recording.

- [VTR] button on the zoom lens.
- [VTR TRIGGER] button on the camera.
- [PLAY] button in the function button.

When recording starts, the tally lamp in front of the viewfinder lights up and "REC" is shown in the viewfinder. (After the button has been pressed, the indicator blinks until recording actually starts.)

9. To pause recording, press one of the following buttons.

- [VTR] button for the zoom lens.
- [VTR TRIGGER] button for the camera.
- [PAUSE] button in the function button.

Notes:

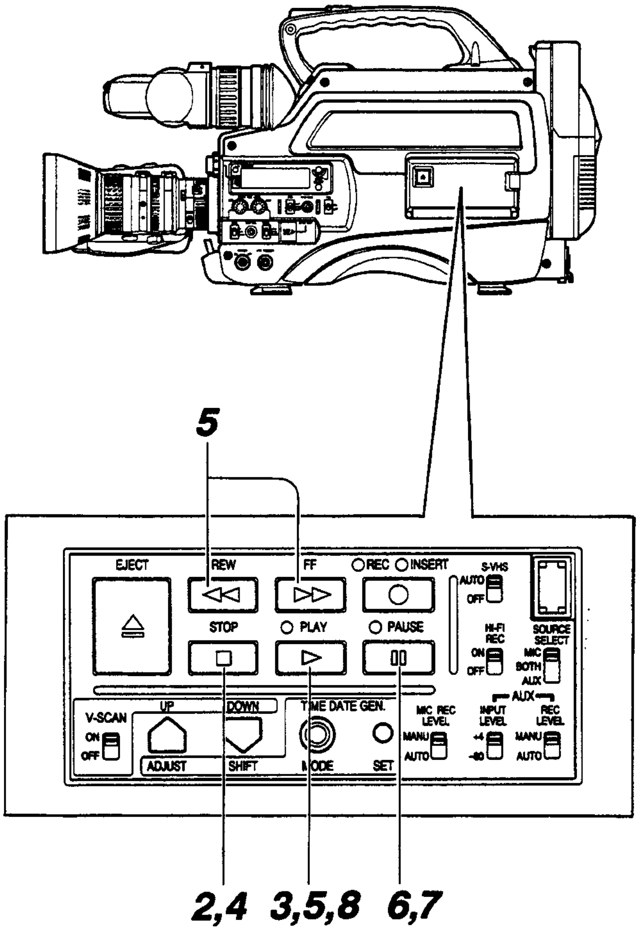
- To restore the Rec Pause mode when recording is stopped with the [STOP] button, press the [REC] button.
- It's also possible to start recording when the VCR is in the Stop mode. However, it takes a little longer because the tape has to load first. Initially, audio output level may vary.

10. When shooting is completely finished, unload the cassette and remove the battery pack or turn the power off.

Notes

- If you switch off the power within one second after the cassette holder is opened, it may not be closed fully. In this case, turn the power on and close the cassette holder.
  Then turn the power off.
- The cassette cannot be ejected if the power supply is insufficient (too low or no battery power). In such a case, replace the battery pack with a charged one.
- After the unit has been left in the Rec Pause mode for 30 minutes or so, drum rotation automatically stops and the operation indication lamp blinks green. This is to protect the video head. To restore the Rec Pause mode, press the [REC] button in the function box.

Checking playback pictures


5
EJECT
REW
FF
REC
INSERT
S-VHS
AUTO
OFF
STOP
PLAY
PAUSE
HI-FI REC
ON
OFF
SOURCE SELECT
MIC
BOTH
AUX
AUX
V-SCAN
ON
OFF
UP
DOWN
ADJUST
SHIFT
TIME DATE GEN.
MODE
SET
MIC REC LEVEL
INPUT LEVEL
REC LEVEL
MANU
AUTO
+4
-60
MANU
AUTO
2,4
3,5,8
6,7

Note:
This unit is designed primarily for recording. Playback capability is provided only to facilitate recording checks. It is recommend that editing VCR be used for dubbing.

To play back the tape:

1. Load a recorded cassette and make sure that the unit is in the Record-Pause mode.
   The Pause and Record LED are light up to red.
2. Press the STOP button.
3. Press the PLAY button.
   Playback pictures will be seen on the viewfinder screen.
4. Press the STOP button to stop playback.

To search at high speed:

5. Press the REW or FF button while in the Play mode; reverse or forward search will start. To restore normal playback, press the PLAY button.
   The search speed is 5 times normal in both directions.

- During search, there may be noise or loss of color in the picture or the picture may become monochrome, This is normal and not a defect of the unit.
- Hi-Fi audio is not output during search.

To play stills or advance frames:

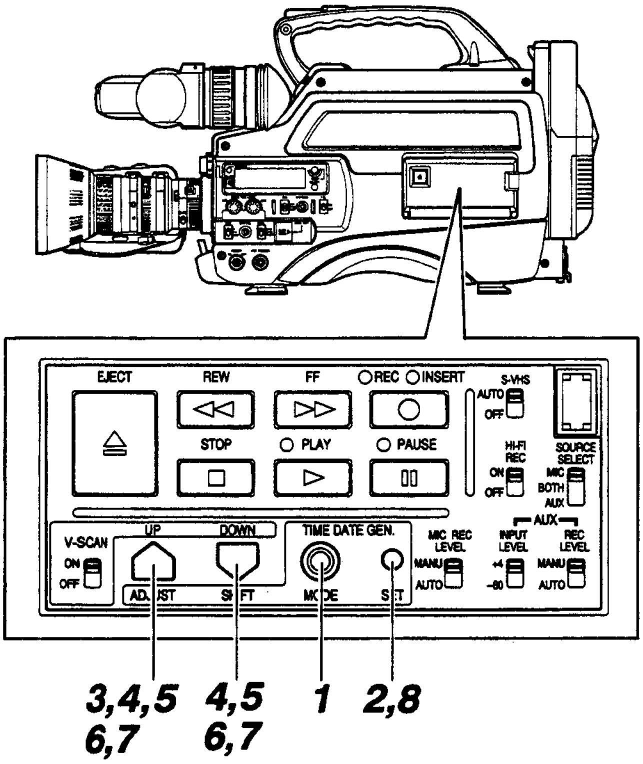
6. Press the PAUSE button for still picture playback.
7. Press again for frame advance. Keeping it pressed advances frames continuously.
8. Press the PLAY button to restore normal playback.

- To protect the tape and video heads if still playback continues for a long time, the tape is advanced by a few frames after about 3 minuts 30 seconds and again after about 7 minutes. After about 10 minutes 30 seconds the head drum stop rotating.
- Noise or vertical vibration in the picture may appear. This is normal.

ADVANCED FUNCTIONS

Recording shooting date/time

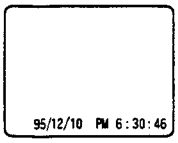
With the built-in [TIME DATE GEN.] Time/date generator, shooting date and time can be recorded.


EJECT
REW
FF
○REC ○INSERT
S-VHS
AUTO
OFF
STOP
○ PLAY
○ PAUSE
HI-FI REC
ON
OFF
SOURCE SELECT
MIC
BOTH
AUX
AUX
V-SCAN
ON
OFF
UP
DOWN
TIME DATE GEN.
MIC REC LEVEL
INPUT LEVEL
REC LEVEL
MANU
AUTO
+4
-60
MANU
AUTO
ADJUST
SHIFT
MODE
SET
3,4,5
6,7
4,5
6,7
1
2,8

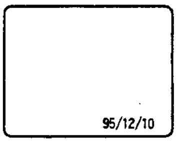
Note:
If there is no activity for 1 minute in the Setting mode, the normal mode is automatically restored.

- Display examples

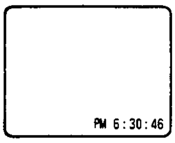
Date and time


95/12/10 PM 6:30:46

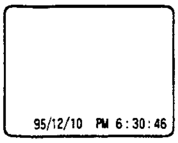
Only date



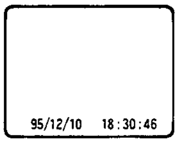
Only time

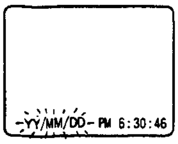


12-hour system

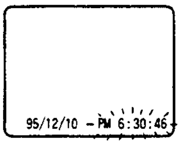

95/12/10 PM 6:30:46

24-hour system


95/12/10 18:30:46


YY/MM/DD PM 6:30:46

Blinking


95/12/10 PM 6:30:46

Blinking

- **Recording shooting date/time**

1. Press the [MODE] button, and the date and time is shown on the viewfinder screen and on a monitor screen. Each time the button is pressed, the display mode changes as follows.

Date and time —Only date—Only time—No indication

Select the display as required.

Notes:
- The time is only set approximately before shipping. Before use, set the date and time precisely.
- The battery installed before shipping is used to check the unit's operation. If the display does not appear when the [MODE] button is pressed, this battery may be exhausted. In this case, contact your nearest JVC dealer.

- **Changing date/time (Setting mode)**

2. With the date/time displayed, press the [SET] button. "YY/MM/DD" blinks, showing that the Setting mode is engaged.

3. First select the order of year/month/date to be displayed. Press the [ADJUST] button to select one of the following three modes.

YY/MM/DD— MM/DD/YY— DD/MM/YY

YY = year (00 - 99), MM = month (1 - 12), DD = day (1 - 31)

4. Then set the "year", "month" and "date" in order. When the [SHIFT] button is pressed, only "year" indication blinks. Press the [ADJUST] button to set the numeric value for the "year".
In the same way, set the "month" and "date" indications.

5. Select the 12-hour system (AM/PM) or 24-hour system. After setting "year", "month" and "date", press the [SHIFT] button. The full time display blinks. Press the [ADJUST] button to select the 12-hour or 24-hour system. AM/PM cannot be selected.

12-hour system (AM/PM) ——24-hour system

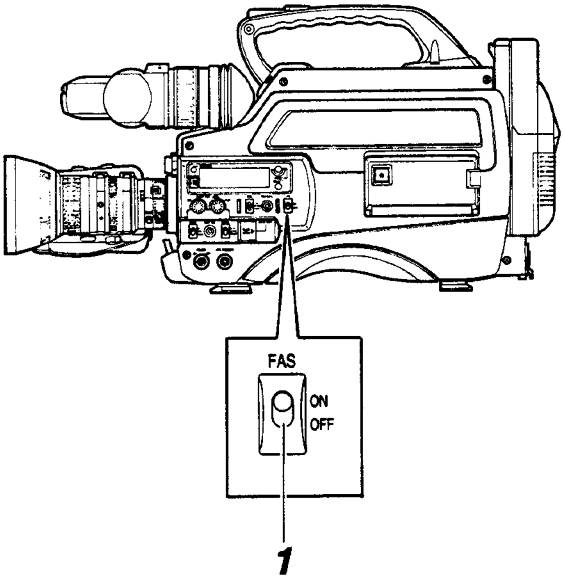
6. Setting "hour" and "minute"
Press the [SHIFT] button so that the "hour" indication blinks and the [ADJUST] button to set the numeric value for the "hour". Then, press the [SHIFT] button to set the numeric value for the "minute".

7. Setting "second"
Press the [SHIFT] button so that the "second" indication blinks and the [ADJUST] button while the "second" indication blinks to start with "0". When the "second" indication is between 30 and 59, "0" start is performed by adding 1 minute.

8. To end setting, press the [SET] button in the Setting modeto restore the normal mode.

* Leap years are automatically compensated for.

FAS (Full Auto Shooting)



VIDEO AUTO LEVEL CONTROL (ALC) CIRCUIT

The FAS mode incorporates a Video Auto Level Control (ALC) circuit. This keeps the video level constant through the combined use of auto iris, electronic shutter, and sensitivity boosting.

- Under standard lighting conditions, the video level is kept constant by the auto iris.
- If the light increases and the iris is closed to its smallest aperture, the video level is kept constant by changing the shutter speed to lower light sensitivity.
- If the light decreases and sensitivity is insufficient even at maximum iris aperture, the electric gain circuit is activated to increase the sensitivity by 1 step. Since this is a stepping system (non-linear), the picture becomes brighter suddenly, resulting in unnatural scene continuity. To prevent this, the GY-X3 uses a system which activates both the gain-up and electronic shutter simultaneously, balancing the "plus" of the gain-up with the "minus" of the shutter to keep the video level constant. When the gain-up is functioning, ALC operation is performed by changing the shutter speed. If lighting should again become insufficient, the gain is boosted by 1 more step and the same operation is performed. The gain-up operation continues up to 12 dB.

Notes:

The screen image may flicker when shooting under fluorescent light.

Move from indoors to outdoors, from a well-lit exterior to a dark interior, all without having to reset the camera. With the FAS function, settings are automatically adjusted in response to changing conditions with no need for switching or filter operations. This comprehensive control incorporates video ALC (Automatic Level Control), EEI (Electronic Iris), auto iris, FAW (Full-time Auto White) and audio AGC (Automatic Gain Control).

● Operation

1. Set the [FAS] Full auto shooting switch to "ON" to engage the Full Auto Shooting mode and to "OFF" to release it and restore the mode previously set. In the Full Auto Shooting mode, "FAS" is shown on the right of the viewfinder screen.
   Refer to "Status display" on page 32.

● Operation range

- ALC :Changes to +12 dB (approx. 4 times).
- EEI :Changes to 1/240 sec. (NTSC)
  :Changes to 1/200 sec. (PAL)
- Auto iris :Changes between F1.4 and F16.
- Object illumination :15 lux - 32,000 lux

Illumination

15 lux	60 lux	8,000 lux	32,000 lux
+12 dB	F1.4	F16	1/240 sec.

FAS operation

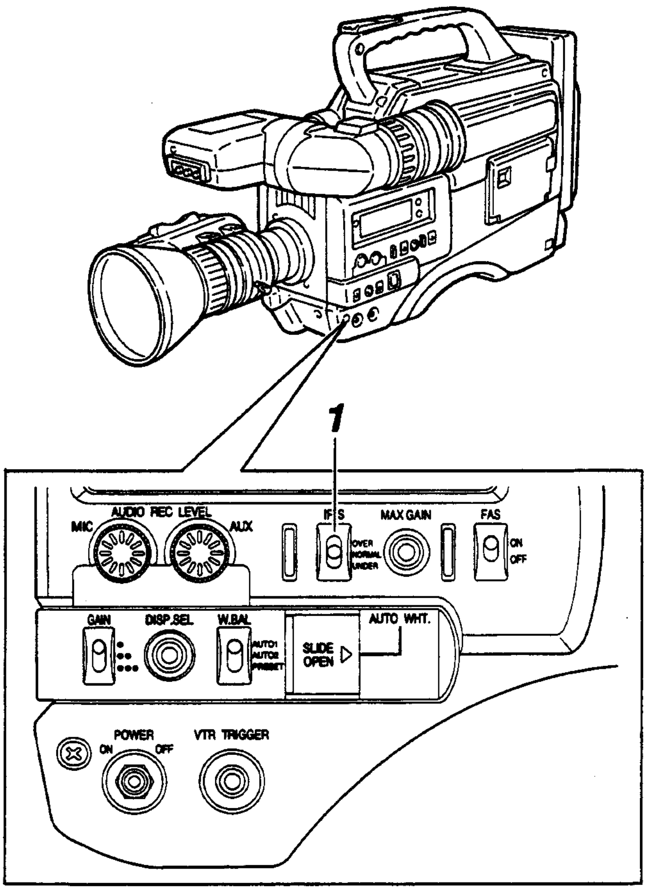
Electric increase ofsensitivity	Auto iris	Electronic iris
Full-time auto white		

● Contents of automatic settings

When the Full Auto Shooting mode is engaged, the following modes are automatically set regardless of the positions of operation switches.

- Zoom lens :Even if the Manual Iris mode is engaged, the Auto Iris overrides it.
- [V. SCAN] switch :Does not function.
- [GAIN] switch :Does not function. The Video ALC mode is engaged.
- [W.BAL] switch :Does not function. The Full-time Auto White mode is engaged.
- [AUX REC LEVEL] switch :Does not function. The "AUTO" mode is automatically set. The [AUX AUDIO REC LEVEL] External input recording level adjustment volume control does not function.
- [MIC REC LEVEL] switch :Does not function. The "AUTO" mode is automatically set. The [MIC AUDIO REC LEVEL] Built-in microphone recording level adjustment volume control does not function.

Iris


1
AUDIO REC LEVEL
MIC
AUX
IRIS
OVER
NORMAL
UNDER
MAX GAIN
FAS
ON
OFF
GAIN
DISP.SEL
W.BAL
AUTO1
AUTO2
PRESET
AUTO WHT.
SLIDE OPEN
POWER
ON
OFF
VTR TRIGGER

•IRIS COMPENSATION SWITCH(OVER/NORMAL/UNDER)

1. When backlight or frontlight compensation is required, adjust the iris with this switch.

Switch setting positions

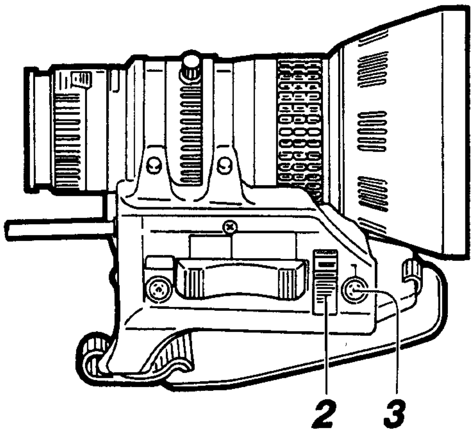
- OVER : The iris opening is increased by 1/2 F stop over the reference value. Used for compensation in a backlit shot.
- NORMAL: Reference value. Normally set to this position.
- UNDER : The iris opening is reduced by 1/2 F stop from the reference value with overlit subjects.

* When the [IRIS] switch is set to "OVER" or "UNDER", "O" or "U" is shown on the right of the viewfinder screen, showing that the mode is not "NORMAL".
Refer to "Status display" on page 32.

Note

This function is operable in the auto iris mode only. If the iris is near its full open or close position, this function may not be operable.

•When using the zoom lens



AUTO IRIS SETTING

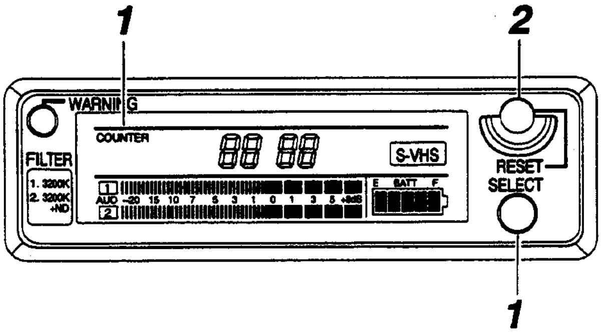
The auto iris mode can be engaged in either of the following ways.

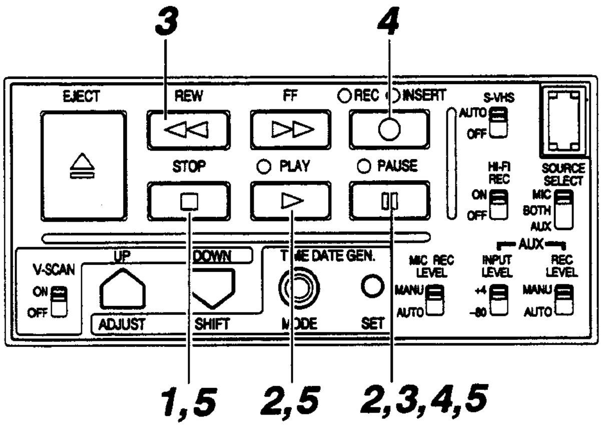
2. Iris mode switch
Set the auto iris switch on the lens.
A : Auto iris, remote operation
M : Manual iris

3. Momentury auto iris button
In the manual iris mode, the auto iris functions as long as this button is kept pressed.

Insert editing

The GY-X3's insert-recording capability allows previously-re-corded video and Hi-Fi audio signals to be replaced with new material.





1. Preparations

- Set the POWER switch to ON.
- Insert a pre-recorded tape.
- Open the VCR panel cover and check the indicators to ensure that the unit is in the Stop mode. (If not, press the STOP button to engage the Stop mode.)
- Select the Counter mode of the display panel.

2. Set the edit-out (insert-out) point

- Press the PLAY button to engage the Play mode. When the point you want insert recording to end is reached, press the PAUSE button to engage the Still mode.
- Press the counter RESET button to set the counter reading to "0000".

3. Set the edit-in (insert-in) point

- Press the REW button to rewind the tape to locate the point you want to start insert recording. When reached, press the PAUSE button to engage the Still mode.

4. Engage the Insert-Pause mode

- In the Still mode, press the REC button simultaneously to engage the Record-Pause mode.
- Press the INSERT (REC) button simultaneously to engage the Insert-Pause mode. Both the INSERT and PAUSE indicators light.

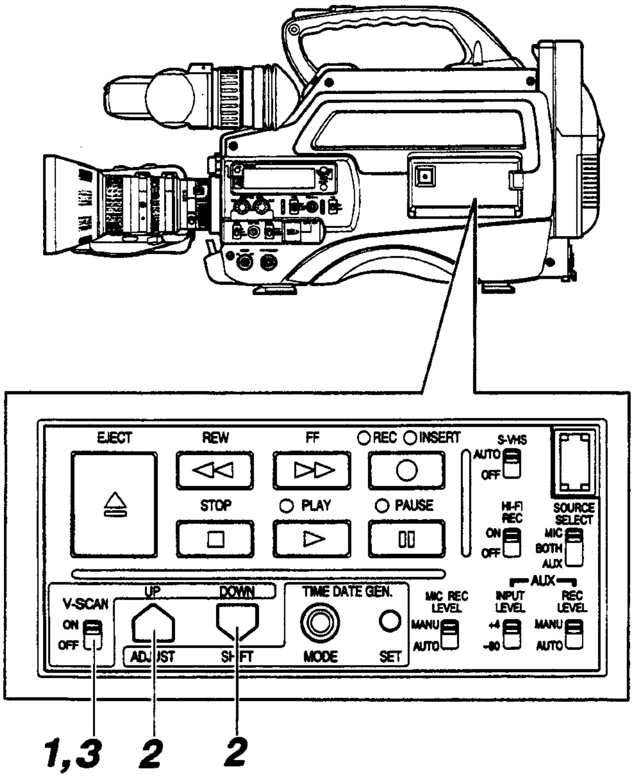
5. Starting and stopping insert recording

- Press the PLAY button to start insert recording. To stop recording before the edit-out point, press the PAUSE button.
- Insert recording stops automatically at the tape counter reading of "0000", and the unit enters the Play mode.
- In the Insert-Recording mode, both the INSERT and PLAY indicators remain lit. The video and Hi-Fi audio tracks are in the Record mode, while the normal audio tracks are in the Play mode.
- During insert recording, press the STOP button to stop the insert recording, the tape is unloaded and the unit enters the Stop mode.

Note:

- It is not recommended to perform insert editing with a tape recorded in another VCR.
- Normal audio cannot be inserted.
- During insert recording, pre-recorded Hi-Fi audio is erase even if the Hi-Fi REC ON/OFF siwtch is set to OFF.
- Insert recording is not possible on a video tape on which the control signals have been recorded imporperly or not at all. If a no-signal tape portion (no control signals) is reached during insert recording, the unit automatically enters the Play mode.
- To protect the tape and video heads, the tape is unloaded and the unit enters the Stop mode if the Insert-Pause mode is continued for about 10 minutes 30 seconds.

Variable scan

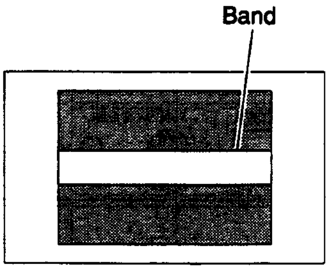


This function sets the shutter speed to match the vertical scanning frequency of computer monitor screens.

When shooting computer display images with a video camera, a bright, over-exposed horizontal bar appears on the screen if the monitor's scanning speed is faster than the camera's shutter speed, and a dark, under-exposed bar appears if the scanning speed is slower.

Since the scanning frequency of the monitor in use may vary, set the camera's scanning speed while checking the image on the viewfinder screen.

1. Set the [V-SCAN] setting switch to "ON" to engage the Variable Scan mode. The current shutter speed is shown in the viewfinder screen for approximately 5 seconds.
2. To eliminate the bands that appear when shooting images on a computer monitor or display, move the position of the band up or down with the [UP] and [DOWN] buttons until it disappears. Keeping the button pressed changes the shutter speed continuously. (approximately 1/60 [NTSC] or 1/50 [PAL] to 1/2,000 sec.)



TV monitor

[UP] button : To increase the shutter speed.
[DOWN] button : To decrease the shutter speed.

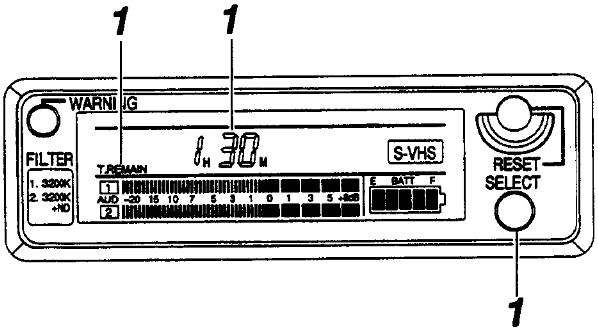
- Pressing both the [UP] and [DOWN] buttons simultaneously for approximately 0.5 sec. sets the shutter speed to approximately 1/100 sec. (NTSC), 1/120 sec. (PAL).
- In a 50-Hz area, selecting approximately 1/100 decreases flickering when shooting under a fluorescent light.
- When the Variable Scan mode is set to "ON", pressing the [UP] or [DOWN] button does not change the shutter speed and the current shutter speed is shown in the viewfinder screen. Within 5 sec., pressing the [UP] or [DOWN] button again changes the shutter speed.
- When the shutter speed is changed, the new shutter speed is shown in the viewfinder for approximately 5 sec.
- Even when the power is turned off or the [V-SCAN] switch is set to "OFF, the shutter speed is remained in memory.

3. Press the [V-SCAN] switch to "OFF" to release the Variable Scan mode.

Notes:

- Not suitable with low-speed computer monitors with vertical scanning speeds of 50 Hz or less.
- The higher the shutter speed, the lower the sensitivity. Because more illumination is required, you cannot use this function in low-light locations.
- When the shutter speed is increased in conjunction with auto iris operation, the iris opens more than it would in ordinary recording and the depth of field changes.
- When used under a fluorescent light, the image may flicker.
- The Variable Scan mode cannot be used in the FAS (Full Auto Shooting) mode.

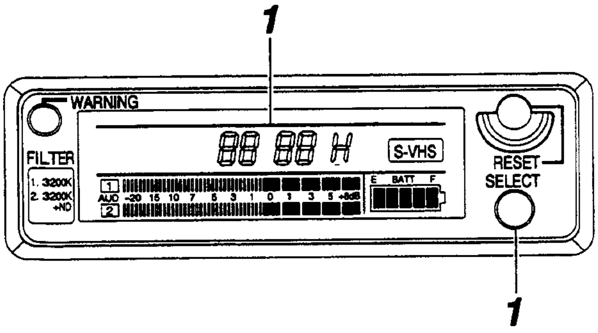
Tape remaining time display

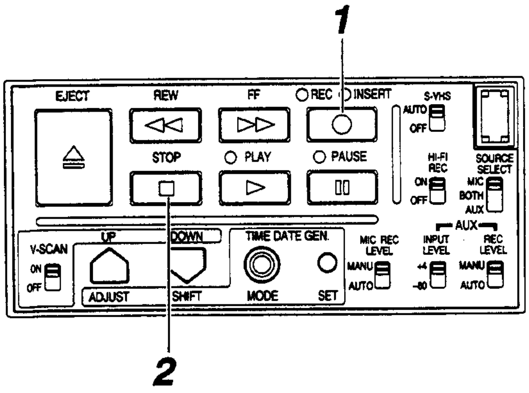

1
1
WARNING
FILTER
1. 3200K
2. 3200K +ND
T.REMAIN
1.30
H
M
S-VHS
AUD -20 15 10 7 5 3 1 0 1 3 5 +8dB
E BATT F
RESET
SELECT
1

1. The remaining tape time is displayed on the display panel. "T. REMAIN" appears and the remaining time is displyed. Press the SLECT button to restore to the tape counter display. The remaining tape time is displayed in 1-minute increments.

- Just after recording is initiated, the display shows "– H – – M". The remaining time will be displayed after a few seconds.
- The remaining tape time is approximate estimate time, Actual remaining time may be different.
- Figures may blink while the remaining tape time is being displayed. This is normal and is not a malfunction.

Hour meter display


1
WARNING
FILTER
1. 3200K
2. 3200K +ND
88 88 H
S-VHS
AUD -20 15 10 7 5 3 1 0 1 3 5 +8dB
E BATT F
RESET
SELECT
1


1
EJECT
REW
FF
REC
INSERT
S-VHS
AUTO
OFF
STOP
PLAY
PAUSE
HI-FI REC
ON
OFF
SOURCE SELECT
MIC
BOTH
AUX
V-SCAN
ON
OFF
UP
DOWN
ADJUST
SHIFT
TIME DATE GEN.
MODE
SET
MIC REC LEVEL
MANU
AUTO
AUX
INPUT LEVEL
+4
-60
REC LEVEL
MANU
AUTO
2

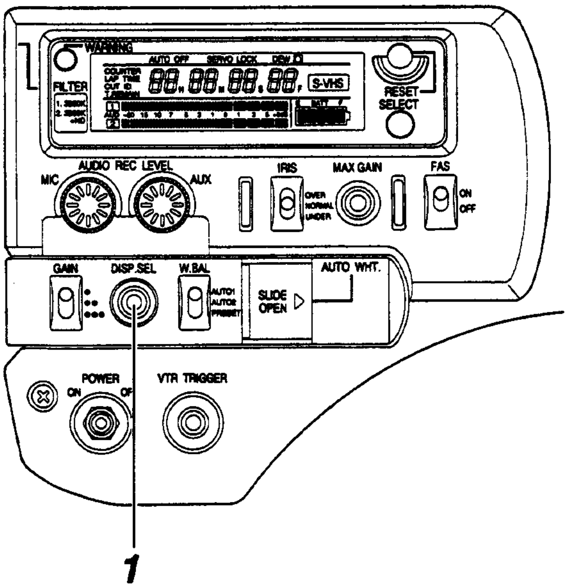
The display panel also features an hour meter function (accumulated head drum operating time).

1. Remove the cassette and shut the cassette holder. Press the REC and SELECT buttons simultaneously, keeping them depressed for about 3 seconds.
The head drum's accumulated operating time of head drum is displayed on the display panel as a 4-digit number.

2. Press the STOP button to restore the regular tape counter display.

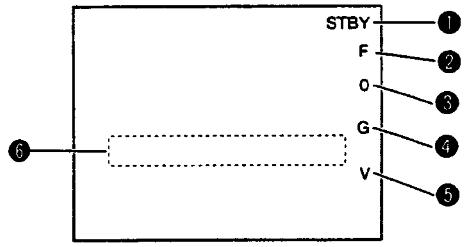
Note:
Close the cassette holder to show the hour meter display.

Status display (camera/VCR status display)


WARNING
FILTER
RESET
SELECT
S-VHS
AUDIO REC LEVEL
MIC
AUX
IRIS
MAX GAIN
FAS
ON
OFF
OVER
NORMAL
UNDER
GAIN
DISP.SEL
W.BAL
AUTO1
AUTO2
PRESET
AUTO WHT.
SLIDE OPEN
POWER
ON
OFF
VTR TRIGGER

1

Screen in the Display "0" mode


STBY
F
O
G
V
❶
❷
❸
❹
❺
❻

Note:

- SAVE (Automatic save condition)
  If left in the Rec Pause mode for 30 minutes or more, tape tension is automatically released and drum rotation is stopped.

This function indicates camera and VCR status on the viewfinder screen. Three display modes are available: Mode-0, Mode-1 and Mode-2. Mode-0 is engaged when the power is turned on.

To select the mode:

1. Push the DISP. SELECT switch. Each time the switch is pushed, the mode changes in the following sequence.

→ Mode-0 → Mode-1 → Mode-2 ↩

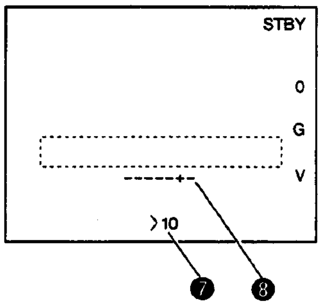
During tape playback the status display cannot be used.

•Display "0" mode

Operation contents are shown for approximately 2 sec. when a special function is selected or when an operation switch is operated.

	Display	**Selected function**
❶	STBY REC STOP SAVE No indication	Shows the VCR operation status. STBY : Recording possible. REC : During recording (after the VCR trigger is pressed, blinks until recording starts.) Note STOP : Stop condition. SAVE : Automatic save condition No indication: No cassette inside.
❷	F	In the Full time Auto White mode. (FAW)
❸	O U No indication	Shows the iris setting. O : Set to "OVER". U : Set to "UNDER". No indication: Set to "NORMAL".
❹	G M No indication	Shows when the sensitivity is electrically increased. G : Gain is increased to +6 dB M : In the Max Gain mode. No indication: When the sensitivity is not increased.
❺	V FAS ALC No indication	V : In the Variable Scan mode. FAS : In the Full Auto Shooting mode. ALC : In the Auto Level Control mode. No indication: In the normal mode.
❻	WHITE BAL GAIN IRIS FAS MAXGAIN	Shows for approximately 2 sec. when the switch is operated. • WHITEBAL PRESET, AUTO1, FAW • GAIN 0dB, 6dB, ALC • IRIS OVER, NORMAL, UNDER • FAS ON, OFF • MAX GAIN ON, OFF

Screen in the Display "1" mode



- **Display "1" mode**

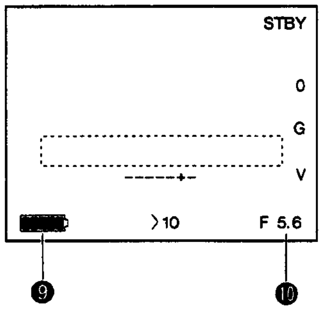
Shows camera and VCR status. The screen in the Display "0" is simultaneously shown as well.

❼ Remaining tape time : >120, >90, >60, >30, >20, >10,
>5, >4, >3, >1, >0

❽ Audio level : 7 steps

–	–	–	–	+	–	–
(–18dB)	(–12dB)	(–6dB)	(–3dB)	(0dB)	(+3dB)	(+6dB)

Screen in the Display "2" mode



- **Display "2" mode**

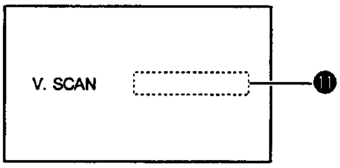
Shows camera and VCR status. The screens in the Display "0" and "1" are simultaneously shown as well.

❾ Battery capacity: The battery capacity is shown in 6 steps.

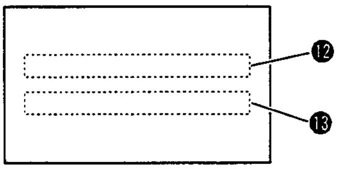
❿ Lens F-stop number: The approximate lens F-stop number is shown. F1.4, F2, F2.8, F4, F5.6, F8, F11, F16, CLOSE

• Operation indications in the Variable Scan or Auto White mode

Variable scan indication



Auto white indication



The variable scan speed and auto white operation indications have priority over other indications.

- Indication when the variable scan speed is changed.

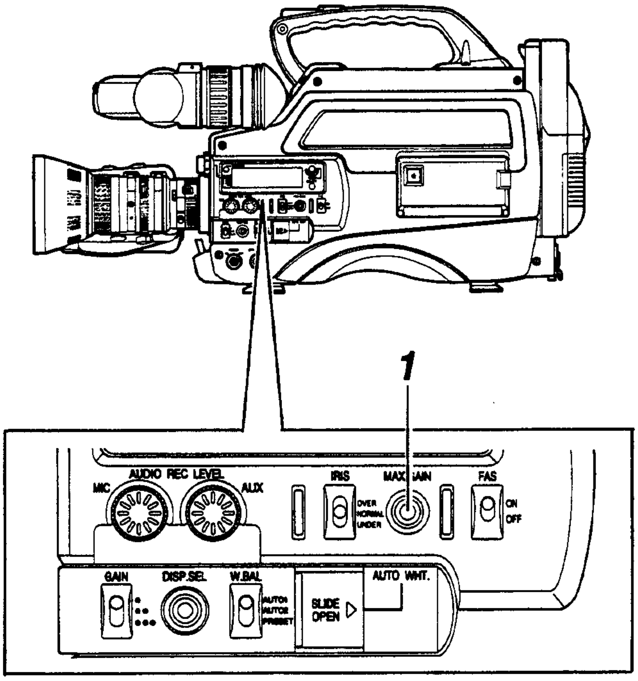
⓫ OFF, 1/60.1 – 1/2084.6 (NTSC)
OFF, 1/50.1 – 1/2067.8 (PAL)

- Indication when the auto white operation is performed

⓬ AUTO WHITE1

⓭ OPERATION, COMPLETED,
LOW LIGHT ERROR, OBJECT ERROR,
OVER LIGHT ERROR

Max Gain mode


1
AUDIO REC LEVEL
MIC
AUX
IRIS
OVER
NORMAL
UNDER
MAX GAIN
FAS
ON
OFF
GAIN
DISP.SEL
W.BAL
AUTO
AUTO
PRESET
SLIDE OPEN
AUTO WHT.

In the Max Gain mode, sensitivity is electrically increased by +24 dB (approx. 16 times), allowing you to shoot at F1.4 under 4-lux illumination. Effective in locations where additional illumination cannot be used or provided.

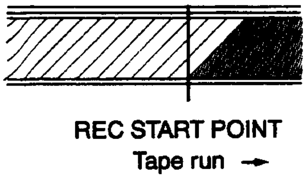
- **Basic operation**

1. Press the [MAX GAIN] switch to engage the Max Gain mode and press again to release it. In this mode, the ordinary gain setting becomes ineffective. However, the auto iris operation can be used. In the Max Gain mode, "M" is shown on the right of the viewfinder screen.
   Refer to "Status display" on page 32.

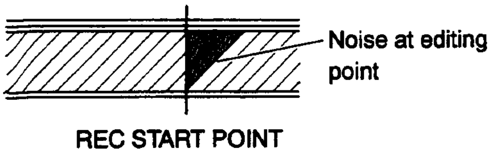
Note:
In the Max Gain mode, noise may increase. This is normal and is not a malfunction.

Flying erase head

- Flying erase head

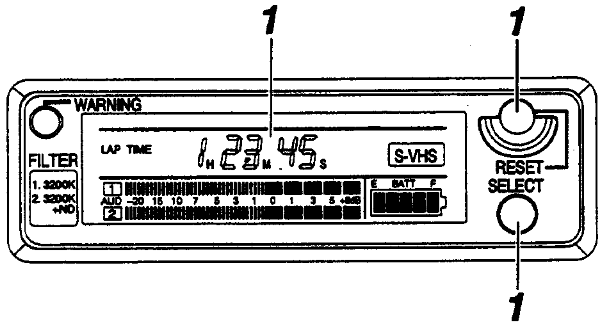

REC START POINT
Tape run →

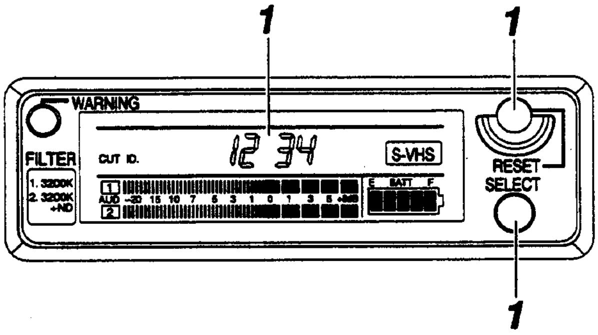
- Full erase head


Noise at editing point
REC START POINT

The rotary erase head erases the video tracks consecutively. When recording video signals, the rotary erase head erases each track just before the video head records on the track. The prevents the rainbow noise that appears with fixed erase head.

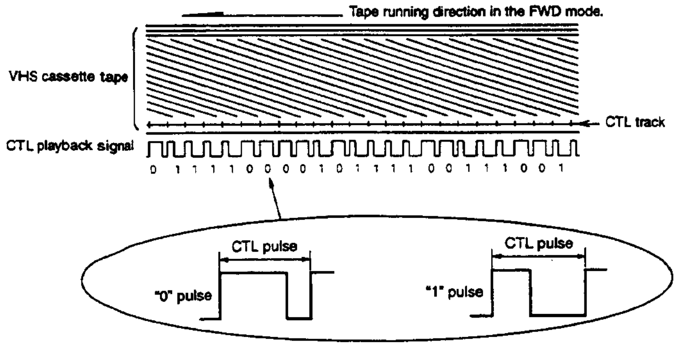
CTL timecode


1
1
WARNING
FILTER
1. 3200K
2. 3200K +ND
LAP TIME
1H 23M 45S
S-VHS
AUD
BATT
RESET
SELECT
1


1
1
WARNING
FILTER
1. 3200K
2. 3200K +ND
CUT ID.
12 34
S-VHS
AUD
BATT
RESET
SELECT
1

CTL timecode

To generate CTL timecode, "0" and "1" signals are expressed by changing the duty ratio of CTL signals. Time data and user data are formed by using CTL signals for 2 seconds. The time data expresses 6-digit time information (hour, minute and second) while the user data expresses hexadecimal 4-digit data. Although CTL timecode data is recorded every 2 seconds, frames between the CTL data are interpolated with CTL pulses so frame-unit indication is possible. CTL timecode allows frame-by-frame editing and search.


Tape running direction in the FWD mode.
VHS cassette tape
CTL track
CTL playback signal
0 1 1 1 1 0 0 0 0 1 0 1 1 1 1 0 0 1 1 1 0 0 1
CTL pulse
CTL pulse
"0" pulse
"1" pulse

This unit automatically records cut ID number and the hour, minute and second in the lap time display.

1. Press the [SELECT] counter select button to check the indicated values of the "LAP TIME" and "CUT ID" modes. Pressing the [RESET] button resets the indicated values to "0".
   For each recorded cut (start/stop), the "CUT ID" number is counted and recorded as CTL timecode data on the tape, together with the "LAP TIME" hour, minute and second.
   "CUT ID" numbers count up to 9999.

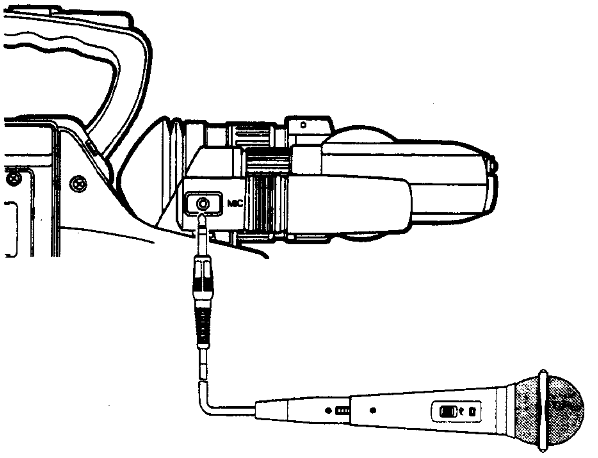
- **CTL time code playback**
  Playback is possible with the BR-S800/BR-S500 VCR. For more information, refer to the BR-S800U/BR-S500 instruction manuals.
  This unit has no CTL timecode reader capability.

Notes:

- When the shooting time is less than 6 seconds., correct data cannot be read.
- Because it takes 2 seconds to generate CTL timecode data, recording must continue for six seconds to read it.
- This unit does not hove a regeneration function. This means that when the power is turned off or the REC PAUSE mode is engaged, the CTL time code may be interrupted. In this case, a * mark may appear at the edit points when the tape is played back on the BR-S800U / BR-S500U.
- Data presetting is not possible with this unit.
- This unit only operates in the non-drop frame mode.

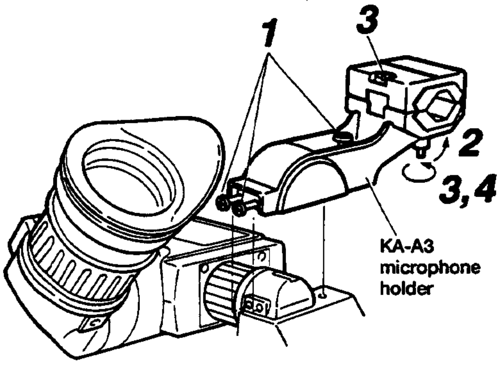
CONNECTING TO EXTERNAL EQUIPMENT

Connection with an external microphone



When using an external microphone, connect a 3.5-mm dia. plug into the external microphone input jack. The microphone should be monaural and have a 3.5-mm dia. plug. Its sensitivity should be around -70 dBs and mic input should be unbalanced at approx. 4.7 kohms. When the plug is connected, the built-in microphone is automatically switched off.

Notes:
- When using a dynamic microphone, keep it away from the viewfinder to avoid recording of camera noise.
- As the microphone input is unbalanced, noise may be mixed in the recording when the microphone cord is extended. If extension is required, use the audio input connector on the rear panel.

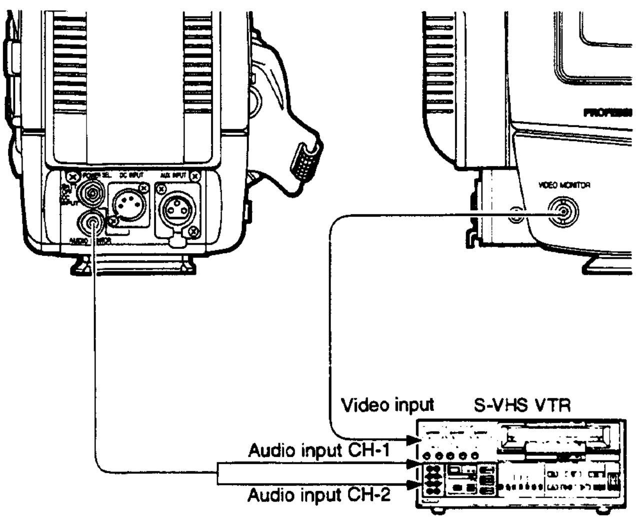


Note:
- When the light mounted on the camera is used at the same time, if the microphone in use has a long sound collecting section (ultra-directional type, etc.), the microphone's shadow may influence the image.

- Using the optional KA-A3 microphone holder enables an external microphone to be attached to the camera. (The outer dimensions of a mountable microphone should be 17 to 26 mm dia.)

1. Mount the microphone holder (KA-A3) using the three screws.
2. Turn the external fixing knob counterclockwise to loosen the quick release hook.
   Pull the knob away from the unit to open the holder.
3. Attach the microphone to the holder and adjust the internal screw and external fixing knob so that the left and right heights of the holder are the same.
4. Turn the external fixing knob clockwise until it is tightened securely.
5. Set the select switches of the camera. Refer to "ADJUSTMENTS BEFORE SHOOTING (VCR SEC TION)" on page 22.

Connection with an external VCR



Use the [VIDEO MONITOR] Video monitor output connector and the [AUDIO MONITOR] Audio monitor output jack to connect a VCR for backup. As the audio output level is fixed at -10 dBs, adjust the level on the VCR.

Notes:
- When this unit is in the Play mode, playback signals are output.
- The playback signals generated by this unit are only suitable for recording checks.

WARNINGS

VCR WARNING FUNCTIONS

The VCR section of this camcorderfeatures acomprehensive warning system which warms the operator of various malfunctions, if any, during shooting recording by means of viewfinder and display panel messages, visual indications via LED or tally lamp. The following chart summarizes the warning system.

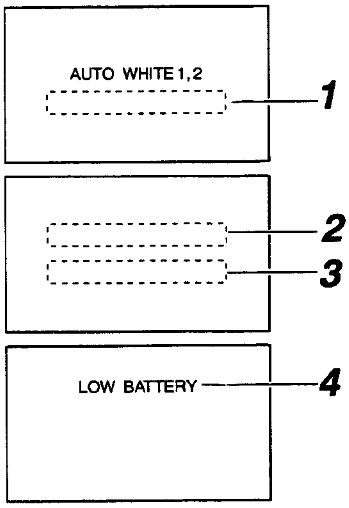
• SYMPTOMS

Warning	Symptom	operation	Warning Light	View-finder Light	LCD Display VF Display
SERVO LOCK	Head, drum and capstan are not locked while recording. No video signal input. (Appears when recording only.)	Operation continues.	❋	❋	"SERVOLOCK" "SERVO"
AUTO OFF	Abnormal rotation of the drum, capstan, reel. Abnormal mechanical position.	Operation will stop after about 10 seconds.	❋	❋	"AUTO OFF" "HARD"
DEW	Moisture condensation occurs.	Stops. No operations except cassette ejection are possible.	❋	❋	"DEW"
TAPE END	About 3 minutes before tape end. (Appears when recording only.)	Operation continuews	◑	◑	- "TAPE NEAR END"
	Tape ends completely.	Stops.	◑	◑	- "TAPE END"
BATT	Battery duration warning.	Operation continuews.	—	—	E BATT F ▮▮▯▯▯
	Battery capacity insufficient.	Enters the Record-Pause mode, then turned off.	—	—	E BATT F ▯▯▯▯▯

◑ : Blinks once per second ❋ : Blinks 4 times per second

- **Warnings with character display**
  When a problem occurs a flickering warning indication detailing the problem is shown in the viewfinder.

Viewfinder display screen



1. Warning display relating to white balance
   - LOW LIGHT ERROR: Insufficient incidental light.
   - OVER LIGHT ERROR: Too much incidental light.
   - OBJECT ERROR: Inappropriate object (not white).
2. Warning display relating to VCR
   - VTR WARNING (SERVO): Defective servo lock.
   - VTR WARNING (HARD): Abnormal mechanism.
   - VTR WARNING (DEW): Moisture condensation.
3. Warning display relating to tape
   - TAPE NEAREND: 3 minutes before the tape reaches the end.
   - TAPE END: The tape has reached the end.
   - NO TAPE: The tape is not loaded.
4. Warning display relating to the battery capacity
   - LOW BATTERY: Pay attention to the battery capacity.

TROUBLE SHOOTING

IN CASE OF DIFFICULTY (TROUBLE SHOOTING GUIDE)

Symptoms	Check Points
No power is applied to the unit.	● Is the power supply unit properly connected? ● Is the battery pack charged? ● Is the (power SEL) switch on the rear panel Set correctly?
Cassette cannot eject after the power is turned on.	● The power supply unit's capacity may be insufficient. Check the power voltage. ● If the power is turned off with in 1 second of opening the cassette holder, the cassette holder may not close properly.
Recording cannot be started.	● Is the safetytab on the cassette removed? Reseal the slot with adhesive tape.
Playback picture is blurred or interrupted.	● Video heads may be dirty. Head cleaning is necessary. Consult your JVC dealer
Tape will not play, rewind or fast-forward.	● Is the tape already fully rewound or fast-forwarded?
Viewfinder image looks dark or unclear.	● Adjust the contrast control. ● Is the filter switch set to 3200+ND? ● Is the iris closed? ● Is the shutter speed too fast? ● Is the viewfinder calbecorrecity connected?
Auto white adjustment is impossible.	● Is the white balance select switch set to [PRESET]?

SPECIFICATIONS

* Design and specifications subject to change without notice.

• CAMERA SECTION

Image pickup device : 1/3-inch interline 3CCDs
Color separation Optical system : 3-color separation prism
Number of Effective pixels : 250,000 pixels (for NTSC)
: 290,000 pixels (for PAL)
Color system : NTSC (R-Y, B-Y encoder)
: PAL (R-Y, B-Y encoder)
Optical filter : 3200 K, 3200K+6.3%ND
Sensitivity : F8, 2000lux
Gain : 0dB, +6dB, ALC, +24dB (MAX GAIN)
Minimum Illumination : 4lx with F1.4 MAX GAIN
S/N ratio : 60 dB (luminance signal) (for NTSC)
: 58 dB (luminance signal) (for PAL)
Contour correction : Horizonal dual-edged,
Vertical dual-edged
Variable scan : Approx. 1/60 sec – 1/2000 sec (for NTSC)
: Approx. 1/50 sec – 1/2000 sec (for PAL)
Microphone : Superdirectional electret condenser microphone
Viewfinder : 1.5 inch, black and white

• VTR SECTION

Format : VHS/S-VHS standard
Tape speed : 33.35 mm/sec (for NTSC)
: 23.39 mm/sec (for PAL)
Record/playback time : 120 min (with T-120 cassette) (for NTSC)
: 180 min (with SE-180 cassette) (for PAL)
Horizonal resolution : Color 400 lines or more (S-VHS mode)
Color 240 lines or more (VHS mode) (for NTSC)
Color 250 lines or more (VHS mode) (for PAL)
Video S/N ratio(color) : 45 dB (NTSC)/44 dB (PAL) (S-VHS mode)
45 dB (NTSC)/44 dB (PAL) (VHS mode)

• ZOOM LENS

Focal length : 5.5 mm to 77 mm
Maximum aperture ratio : F1.4
Focal range : 10 cm to infinite
Iris range : F1.4 to 16, close
Front frame screw dia. : 62 mm, P = 0.75 mm

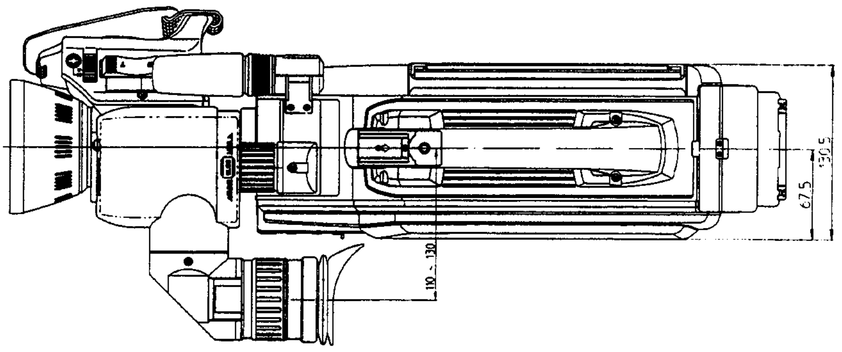
• INPUT/OUTPUT SIGNALS

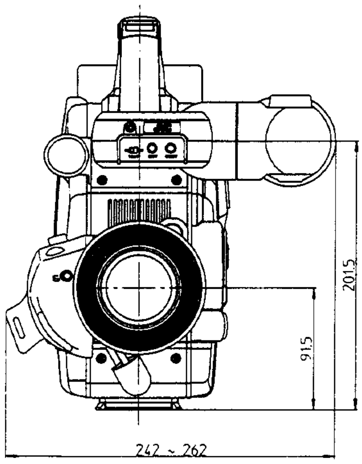
Video monitor output : VBS 1 Vp-p, 75 ohms, (BNC)
Audio monitor output : CH1 (L); -10 dBs
CH2 (R); -10 dBs
(3.5-mm dia. mini-jack)
Camera mic input : -70 dBs (with the built-in microphone), 4.7 kohms, unbalanced
Aux audio input : Switchable either +4 dBs, 10 kohms, balanced or
-60 dBs, 3 kohms, balanced (XLR-3)
Power supply : 12V DC(11 to 15V)
Power consumption : 22W (NTSC)/24W (PAL)
Weight : Approx. 5.8kg(12.7lbs)
Operating temperature range : 0°C to +40°C(+32°F to +104°F)
Operating Humidity : 30% to 80%
Storage temperature range : –20°C to +60°C(–4°F to +140°F)

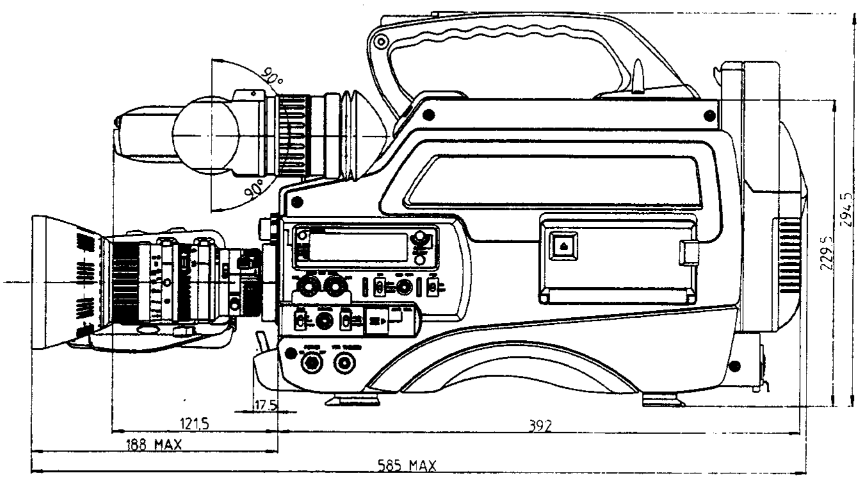
ACCESSORIES

Tripod base 1
Instruction manual 1

EXTERNAL DIMENSIONS (unit : mm)


130.5
67.5
110 ~ 130


201.5
91.5
242 ~ 262


90°
90°
294.5
229.5
121.5
17.5
392
188 MAX
585 MAX

JVC

VICTOR COMPANY OF JAPAN, LIMITED

Print
SC967
SC9673

SECTION 1
SERVICE CAUTIONS AND DISASSEMBLY

1.1 REPLACEMENT OF FUSE

Note:
Before replacing a fuse, the reason why it blew should be invested to prevent trouble from spreading. The malfunction should be repaired before replacing the fuse.

1. Before replacing a fuse, turn off the power switch of both the camera and AC adapter without fail.
2. Remove the left side cover and the VO board referring to the instruction of the section 1.7.7.
3. A fuse (F1) is fitted onto the PS1 board.
4. For the safety and protection of the unit, replace only with fuse having specified part numbers.

Symbol No.	Part Number	
	U version	E version
⚠ F1	QMF51U1-3R15 3.15A, 125V	QMF51A2-3R15 T3.15A, 250V

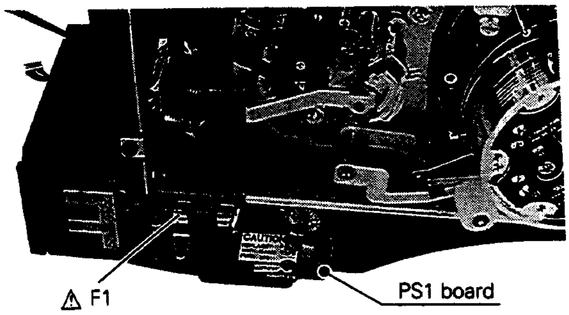


Fig. 1-1-1 Fuse (F1)

1.2 REMOVAL OF VIEWFINDER

1. Remove three screws ① and the viewfinder Ⓐ can be detached from the main body.

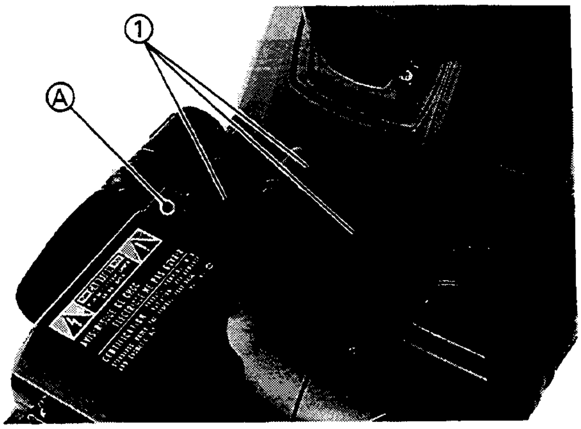


Fig. 1-2-1 REMOVAL of viewfinder

1.3 REMOVAL OF BATTERY HOLDER

1. Remove a screw ② first and then the bottom cover Ⓑ of the battery holder.

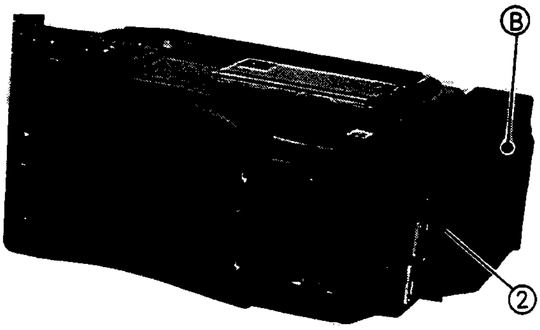


Fig. 1-3-1

2. Remove two screws ③.

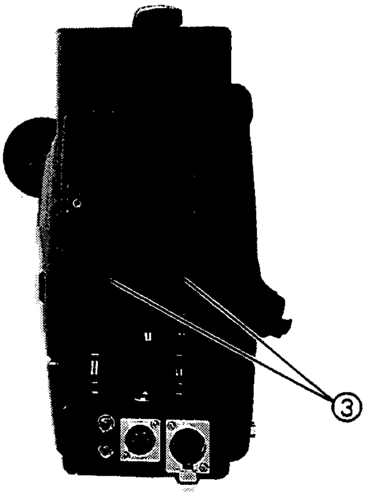


Fig. 1-3-2

3. Open the top cover of the battery holder and remove two screws ④. Then the battery holder Ⓒ can be detached from the main body.

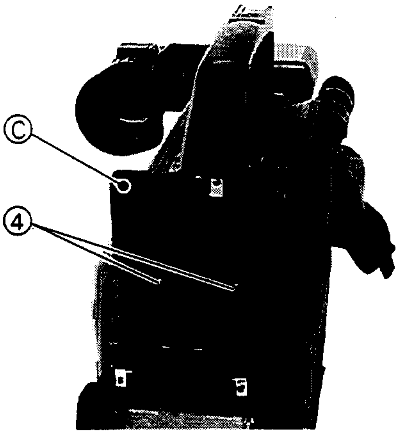


Fig. 1-3-3 REMOVAL of battery holder

1.4 REMOVAL OF MICROPHONE FROM BODY

1. Remove the optical block assembly referring to the section 1.6.3.
2. Remove three screws⑤ and the microphone Ⓓ can be removed from the body.

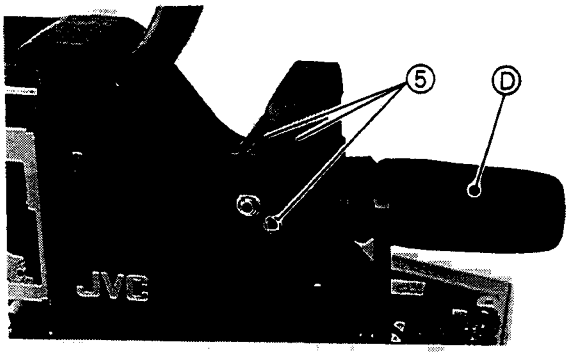


Fig. 1-4-1 Removing of microphone

1.5 REMOVAL OF LENS

1. Remove the zoom lens and front panel from the body referring to the section 1.6.4.
2. Remove a screw⑥.

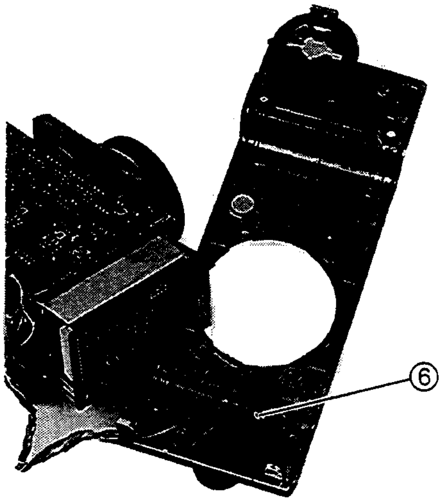


Fig. 1-5-1

3. Hold the holder Ⓔ as shown in Fig. 1-5-2 while turning it to remove it from the plate, and the lens cable can be disconnected from the body.

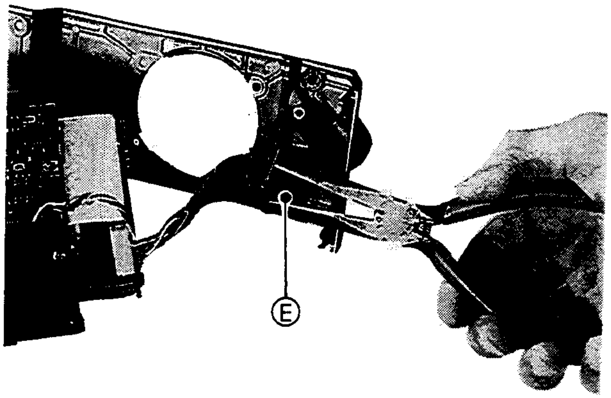


Fig. 1-5-2 Removing of lens

1.6 REMOVAL OF MAIN PARTS

1.6.1 Removing of left side cover

1. Remove two screws ⑦ from the bottom of the body and then take the shoulder pad Ⓕ away.

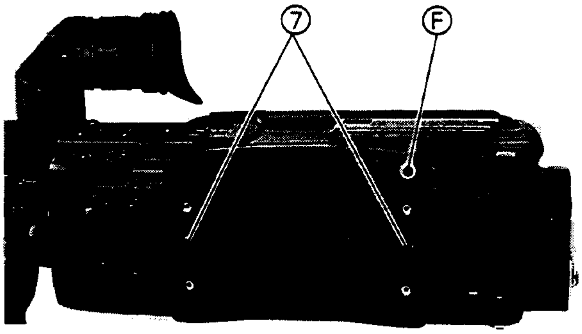


Fig. 1-6-1 Removing of shoulder pad

2. Turn on the power switch of the camera and press the EJECT button to open the cassette cover.
3. Remove two screws⑧and draw the cassette cover in the direction of the arrow to remove it.

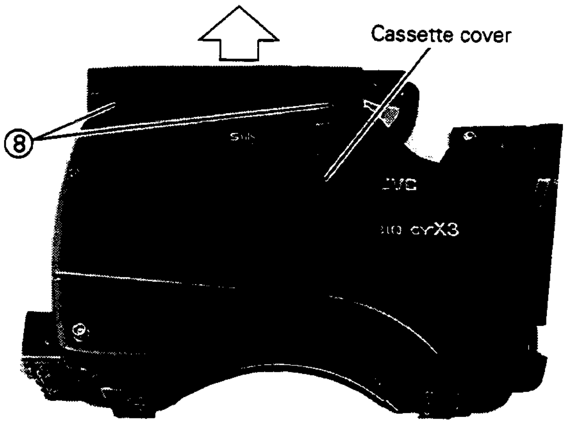


Fig. 1-6-2 Removing of cassette cover

4. Remove five screws ⑨ and the left side cover Ⓖ can be put off.

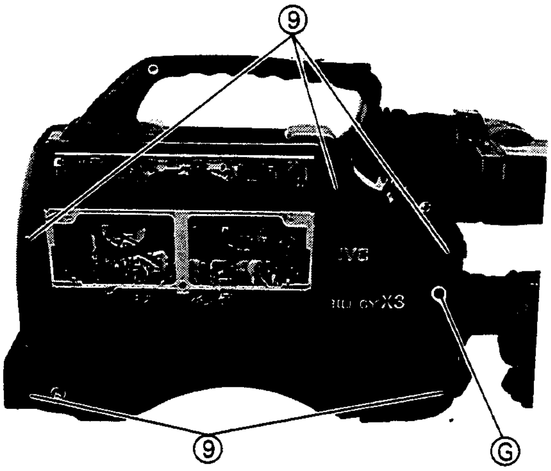


Fig. 1-6-3 Removing of left side cover

Note:
When assembling the left side cover to the body again, be careful not to catch the shield of the PRE/REC board between shoulder pad and left side cover.

1.6.2 How to open right side cover

1. Remove five screws ⑩.
2. Pull the right side cover Ⓗ toward you to open it.

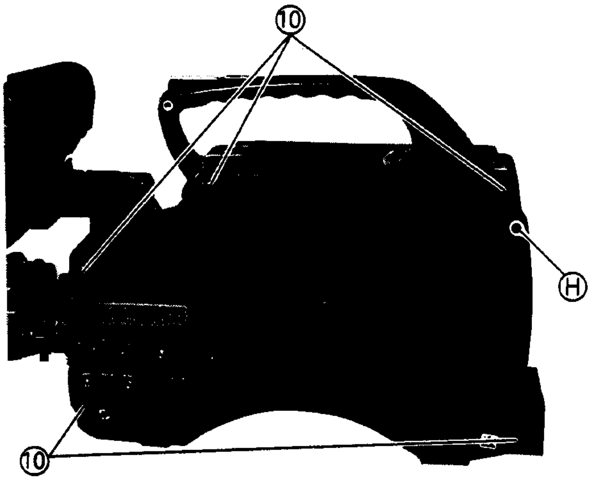


Fig. 1-6-4 How to open right side cover

1.6.3 Removal of optical block assembly

1. Remove the viewfinder from the body referring to the section 1.2.
2. Open the right side cover referring to the section 1.6.2.
3. Remove two screws ⑪ from the bottom of the body.

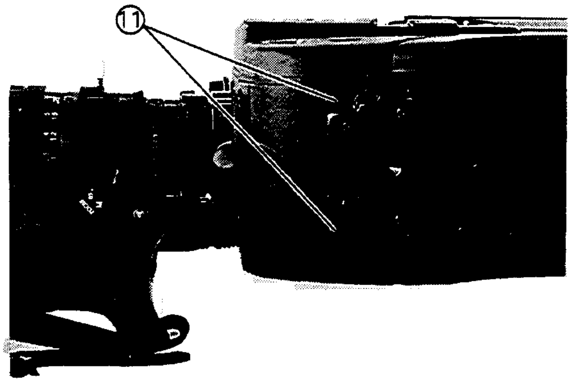


Fig. 1-6-5

4. Remove four screws ⑫ on the front frame.

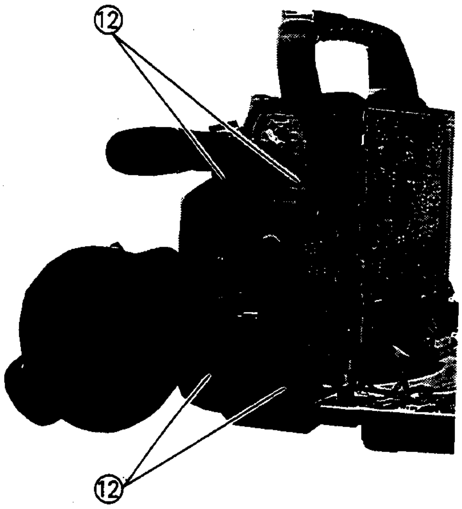


Fig. 1-6-6

5. Draw out the optical block assembly frontwards together with the front frame Ⓘ.
(The optical block assembly is connected to the MT board with the board connector Ⓙ.)

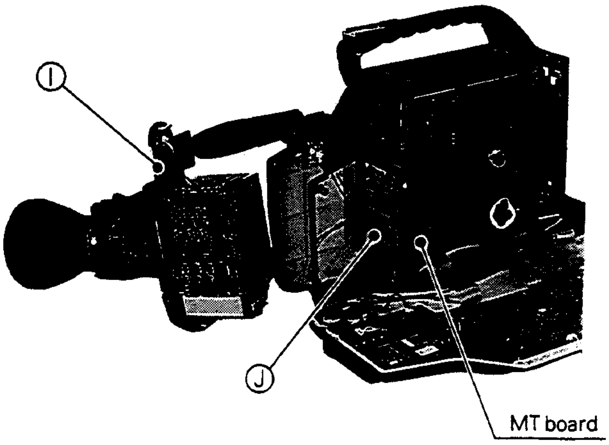


Fig. 1-6-7 Removing of optical block assembly

6. Connection between the optical block assembly and the MT board can be extended by use of the extension cable (See 1.17 SPECIAL IMPLEMENTS FOR SERVICE).

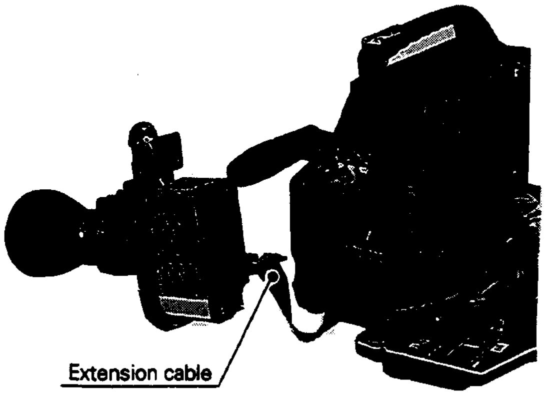


Fig. 1-6-8 Extended connection of optical block assembly

Note:
When re-assembling the optical block assembly to the body, make sure that the board connector Ⓙ of the PR2 board is firmly coupled with the MT board in the main body. Otherwise, it may cause a machine trouble.

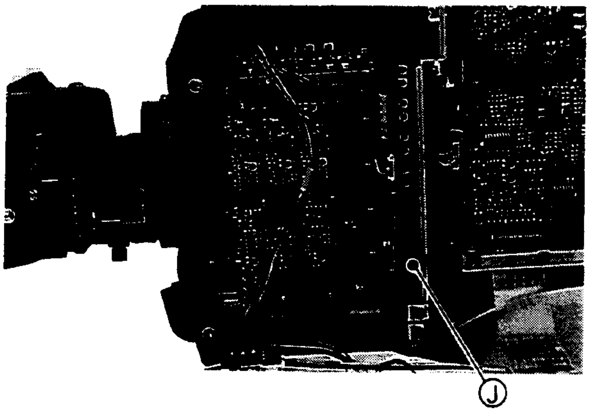


Fig. 1-6-9

1.6.4 Removing of front frame

1. Remove the optical block assembly referring to the section 1.6.3.
2. Remove a hexagon headed screw ⑬ and turn the mount ring Ⓚ in the direction of the arrow, and then the zoom lens can be detached from the body.
   For turning the mount ring Ⓚ, it is advised to use the lens detaching tool (SC45961) because it facilitates the turning work. Explaining in detail, insert the detaching tool into the tapped hole for the screw ⑬ while turning the mount ring with it in the direction of the arrow.

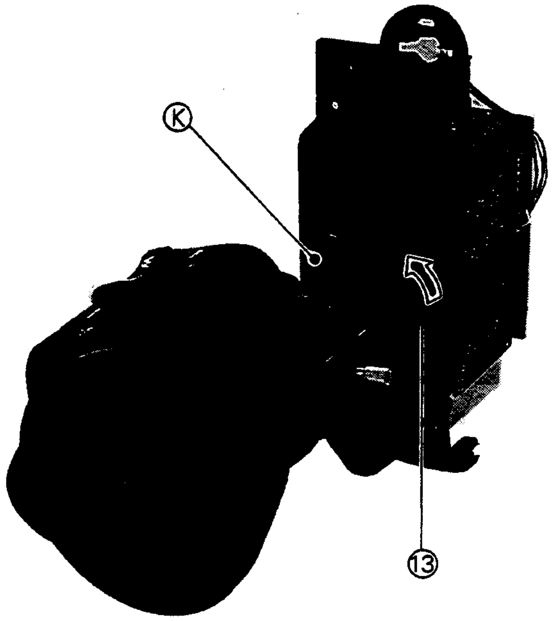


Fig. 1-6-10

3. Remove two hexagon headed screws ⑭ and then remove the filter knob Ⓛ.
4. Remove four screws ⑮ and the front frame Ⓘ can be removed.

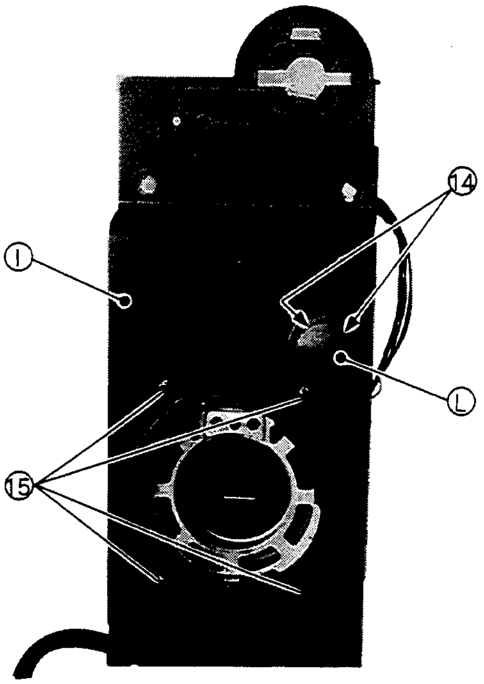


Fig. 1-6-11 Removing of front frame

1.6.5 Replacement of CCD block

Note:

If the CCD is judged that has something abnormal, the CCD cannot be replaced alone because it is precisely glued to the prism. Therefore, it is required to replace the CCD block whole for replacing the CCD.

1. Remove the optical block assembly and front frame referring to the section 1.6.4.
2. Remove two screws ⑯ and then remove the optical filter assembly Ⓜ .

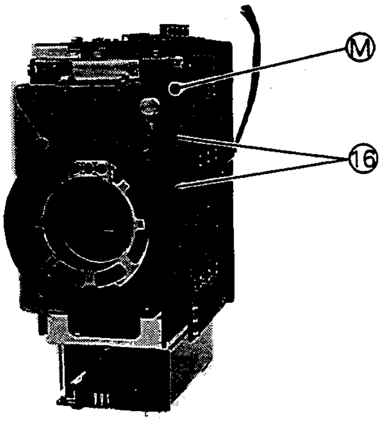


Fig. 1-6-12

3. Remove three screws ⑰ and then remove the PR2 board.

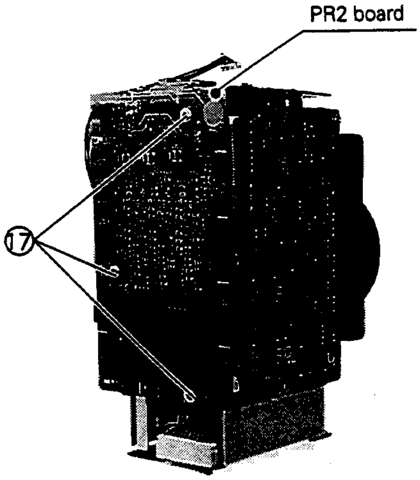


Fig. 1-6-13

4. Remove Two screws ⑱ .

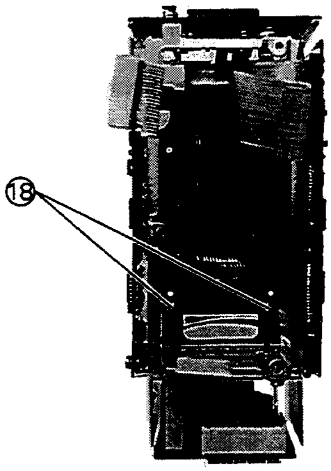


Fig. 1-6-14

5. Remove two screws ⑲ and then remove the DR, PR1, CC and PS2 boards together with the base bracket Ⓝ .

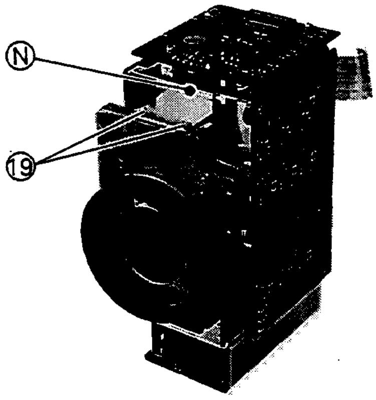


Fig. 1-6-15

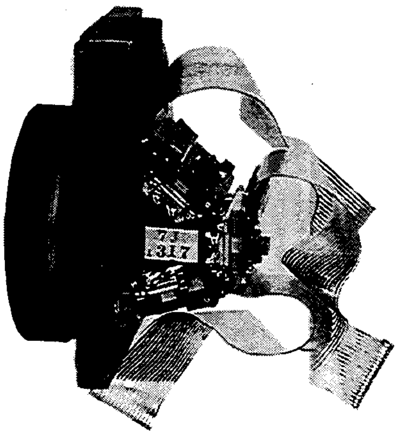


Fig. 1-6-16 CCD block

- The CCD block supplied as a replacement part is not fitted with the front panel, DR, PR1, PR2, CC and PS2 boards. Therefore, it is required to fit the DR, PR1, PR2, CC and PS2 boards that have been removed from the old CCD block to the new CCD block supplied for replacement before assembling it to the camera body.

1.6.6 Removing of VTR assembly

1. Remove the left side cover and open the right side cover according to the instruction of the section 1.6.1 and 1.6.2 respectively.
2. Remove the optical block assembly according to the instruction of the section 1.6.3.
3. Remove four screws ⑳ .

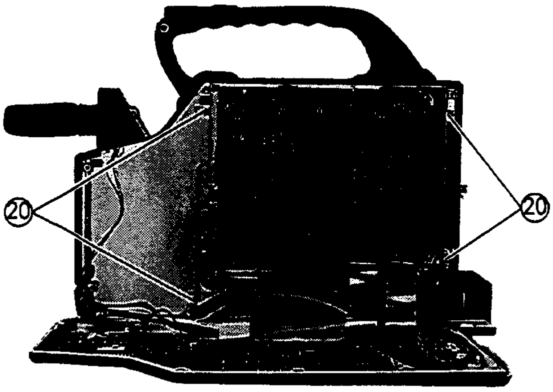


Fig. 1-6-17

4. Remove four screws ㉑ and draw out the VTR assembly Ⓞ toward you for removing.

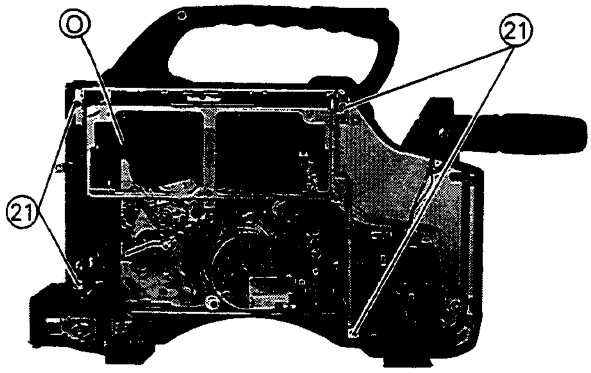


Fig. 1-6-18 Removing of VTR assembly

1.7 REMOVAL OF MAIN BOARDS

1.7.1 Removing of AUCP board

1. Open the right side cover referring to the section 1.6.2. The AUCP board is fixed on the back of the side cover.
2. Remove eight screws ㉒, and the AUCP board can be removed.

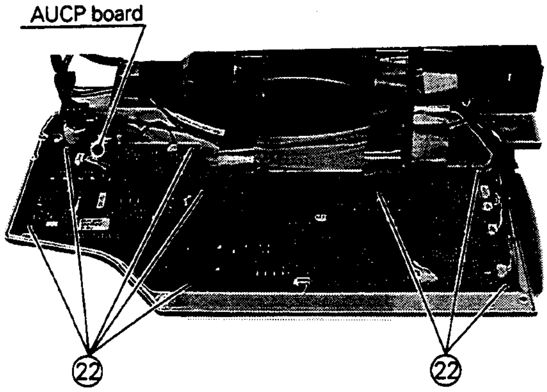
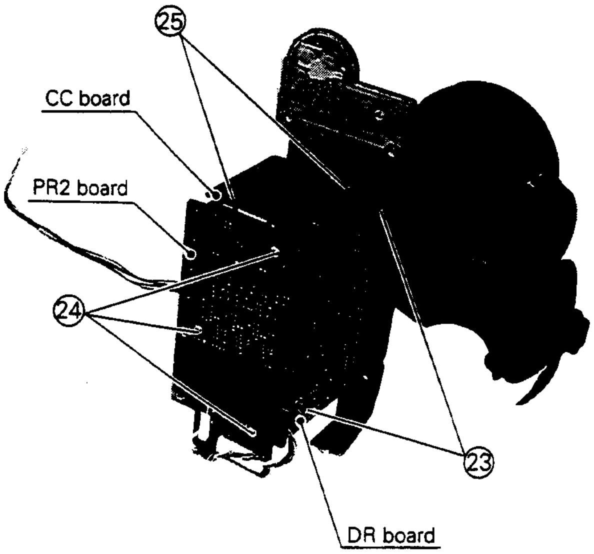


Fig. 1-7-1

1.7.2 Removing of DR, PR1, PR2, CC, PS2 boards

1. Remove the optical block assembly referring to the section 1.6.3.
2. Remove a screw ㉓ and the DR board can be removed.
3. Remove three screws ㉔ and the PR2 board can be removed.
4. Remove two screws ㉕ and the CC board can be removed.



Note :

As the DR board is left removed, don't turn on the set at all, otherwise it may cause a machine trouble.
(for the reason that the DR board supplies switching pulse to the switching regulator of the PS2 board)

Fig. 1-7-2 Removing of DR, PR2, CC boards

5. Remove two screws ㉖ and the PR1 board can be removed.
6. Remove two screws ㉗ and the PS2 board can be removed.

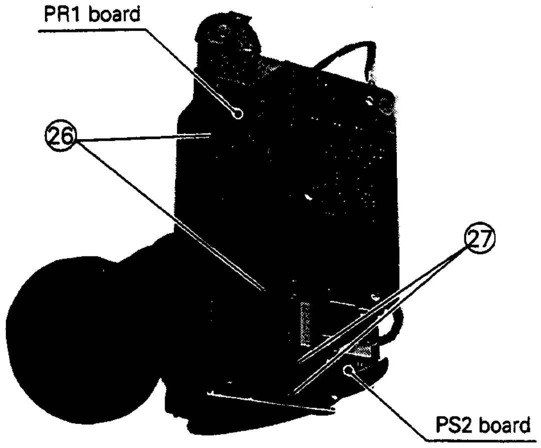


Fig. 1-7-3 Removing of PR1, PS2 boards

1.7.3 Removing of VIDEO board

1. Open the right side cover referring to the section 1.6.2.
2. Remove two screws ㉘ .

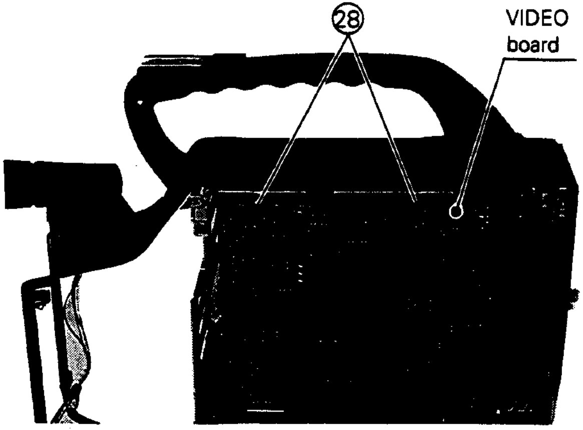


Fig. 1-7-4

3. Open the VIDEO board so as to unfold it while drawing it out in the direction of the arrow for removing.

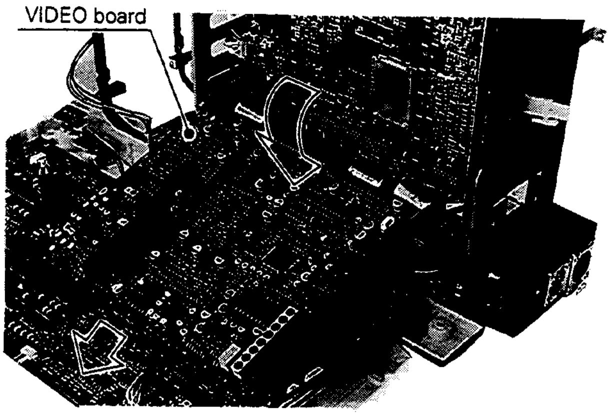


Fig. 1-7-5 Removing of VIDEO board

1.7.4 Removing of S/S board

1. Open the VIDEO board referring to the section 1.7.3.
2. Loosen two screws ㉙ .
3. Pull up the S/S board for removing. (See Fig. 1-7-6.)

1.7.5 Removing of SE board

1. Open the VIDEO board referring to the section 1.7.3.
2. Loosen a screw ㉚ .
3. Pull up the SE board for removing.

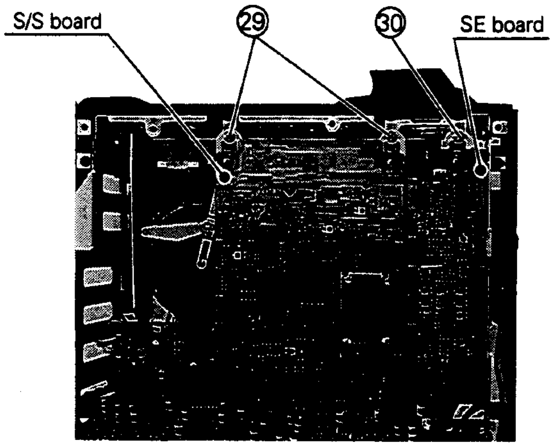


Fig. 1-7-6 Removing of S/S, SE boards

- Use of the extension board (PGJ05046) for S/S and SE board is helpful for measuring voltage, etc. (This extension board is not needed for electrical adjustment.)

Note:

Make sure not to turn on the set as the SE board is disconnected is disconnected, otherwise it may cause a machine trouble (for the reason that the SE board supplies SW pulse to the switching regulator of the PS2 board).

1.7.6 Removing of P/R JUNC, M JUNC boards

1. Open the VIDEO board referring to the section 1.7.3.
2. Remove two screw ㉛ .
3. Pull up the P/R JUNC board for removing.
4. Remove the S/S and SE boards referring to the section 1.7.4 and 1.7.5 respectively.
5. Remove a screw ㉜ .
6. Pull up the M JUNC board for removing.

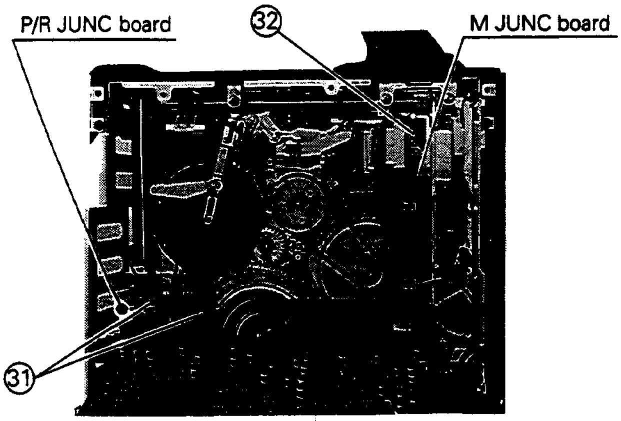


Fig. 1-7-7 Removing of P/R JUNC, M JUNC boards

6. At the back of the M JUNC board, the MDA board is connected to the MT board.

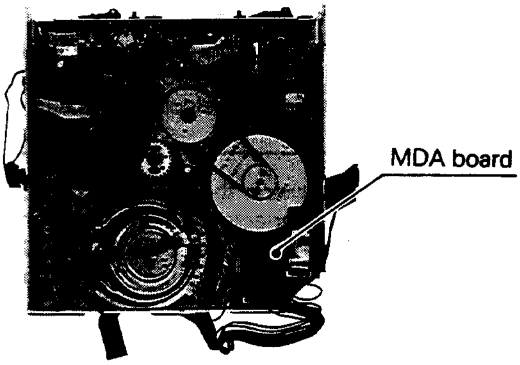


Fig. 1-7-8 MDA board

1.7.7 Removing of PRE/REC, VO board

1. Remove the left side cover referring to the section 1.6.1.
2. Remove two screws ㉝ and the PRE/REC board can be removed.
2. Remove two screws ㉞ and the VO board can be removed.

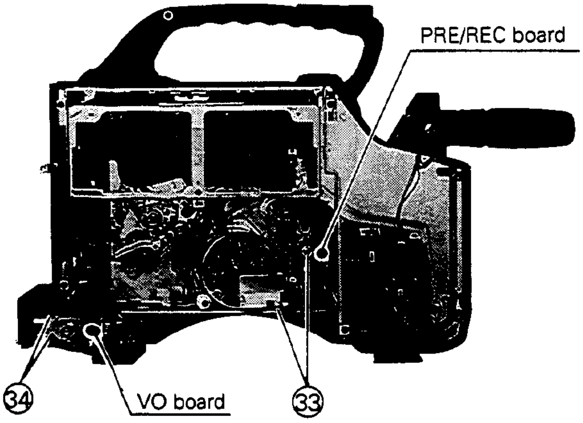
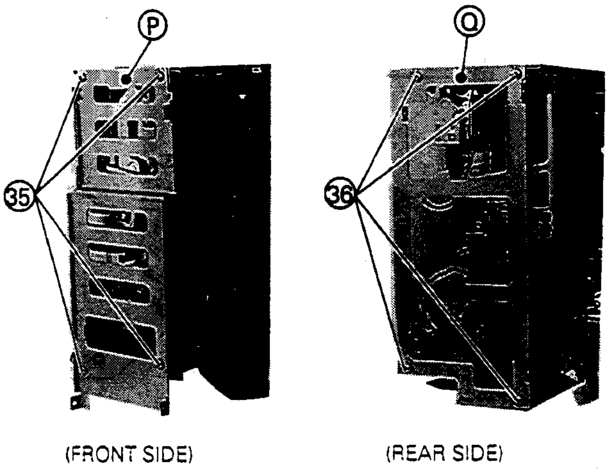


Fig. 1-7-9 Removing of PRE/REC, VO boards

1.8 REMOVAL OF CASSETTE HOUSING

1. Remove the VTR assembly referring to the section 1.6.6.
2. Remove the VIDEO, S/S AND SE boards referring to the section 1.7.3, 1.7.4, 1.7.5 respectively.
3. Remove four screws ㉟ and then remove the front cover Ⓟ.
4. Remove four screws ㊱ and remove the rear cover Ⓠ.



(FRONT SIDE) (REAR SIDE)

Fig. 1-8-1

5. Remove two screws ㊲ and then remove the top frame Ⓡ.

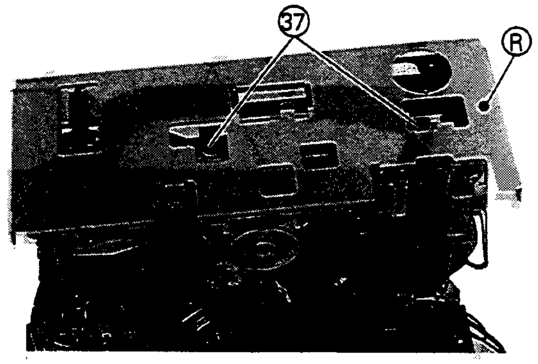


Fig. 1-8-2

6. Remove a screw ㊳ retaining the REC SAFETY switch assembly. (See Fig. 1-8-4.)
7. Enter the cassette housing into the EJECT mode by sliding the lock plate assembly.
8. Remove a screw ㊴ and remove the damper assembly Ⓢ.

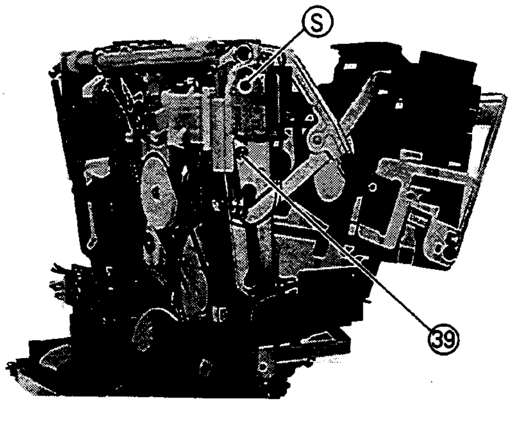


Fig. 1-8-3

9. Remove two screws ㊵.

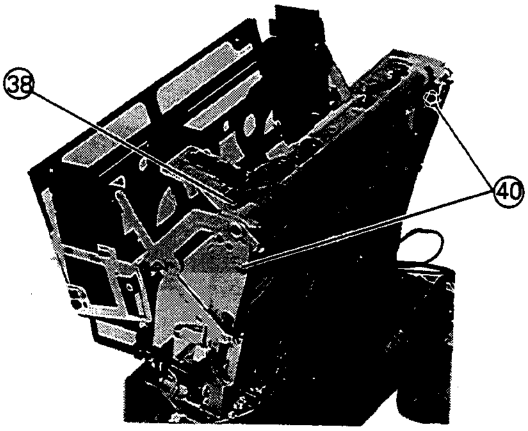


Fig. 1-8-4

10. While drawing the whole cassette housing toward you, detach it from the main deck by unhooking its foot from the hole one after another.

1.9 DISASSEMBLING OF LENS

1.9.1 Removing of lens hood

1. Turn the lens hood Ⓣ in the direction of the arrow while drawing it out frontwards.

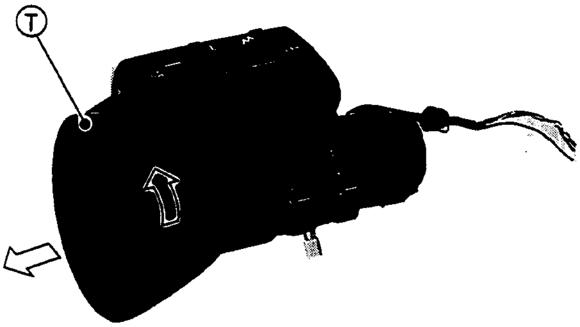


Fig. 1-9-1 Removing of lens hood

1.9.2 Removing of main cover

1. Remove the switch cover Ⓤ first.
2. Remove five screws ㊶ and the main cover Ⓥ can be removed. For detaching the main cover, it is suggested to raise the main cover so as to make a circle with it.

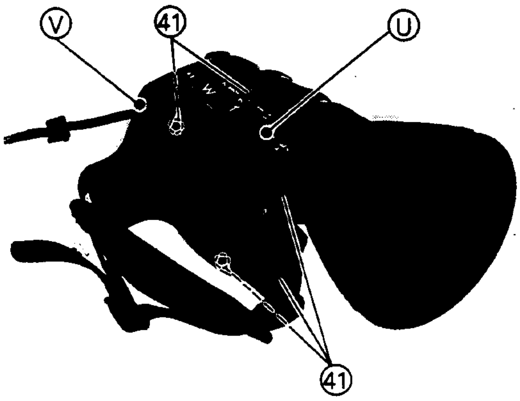


Fig. 1-9-2(a)

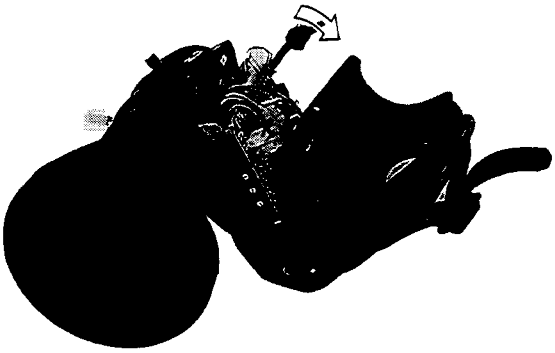


Fig. 1-9-2(b)

Fig. 1-9-2 Removing of main cover

1.9.3 Removing of IRIS ZOOM AMP board

1. Remove two screws ㊷ and the IRIS ZOOM AMP board can be removed.

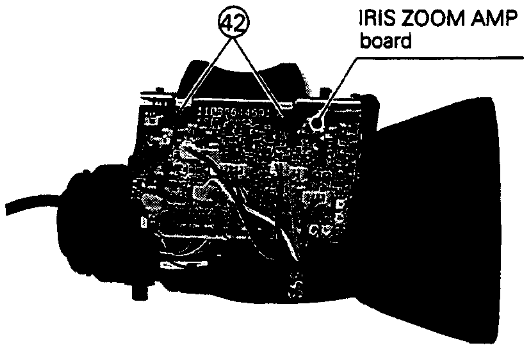


Fig. 1-9-3 Removing of IRIS ZOOM AMP board

1.9.4 Removing of motor assembly

1. Remove two screws ㊸ and the seesaw control assembly Ⓦ first.

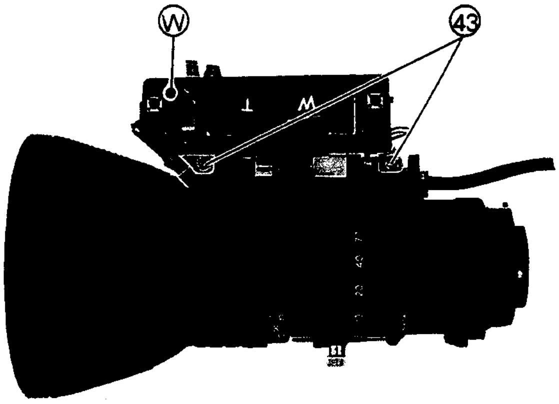


Fig. 1-9-4

2. Remove three screws ㊹ and the zoom gear assembly can be removed.
3. Remove a screw ㊺ and then remove the retaining plate Ⓨ.
4. Remove a screw ㊻ and the iris gear assembly can be removed together with the potentiometer.

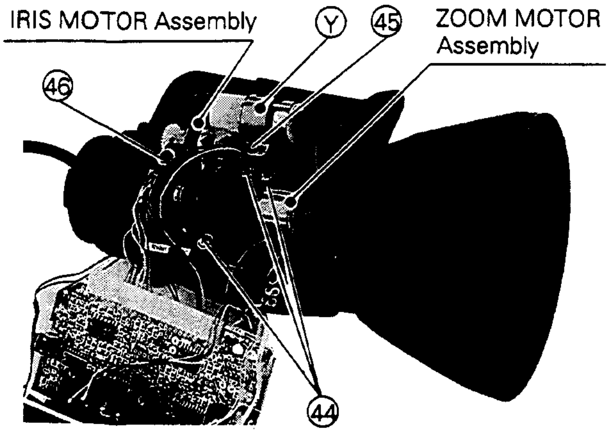


Fig. 1-9-5 Removing of motor assembly

1.10 DISASSEMBLING OF VIEWFINDER

1.10.1 Opening of cover

1. Turn the lock ring-1 ⓑ in the direction of the arrow to loosen it.

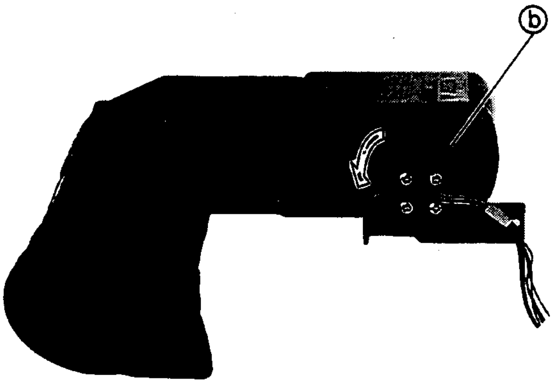


Fig. 1-10-1

2. Remove two screws ㊽ and four screws ㊾, and then the upper cover ⓓ can be opened.

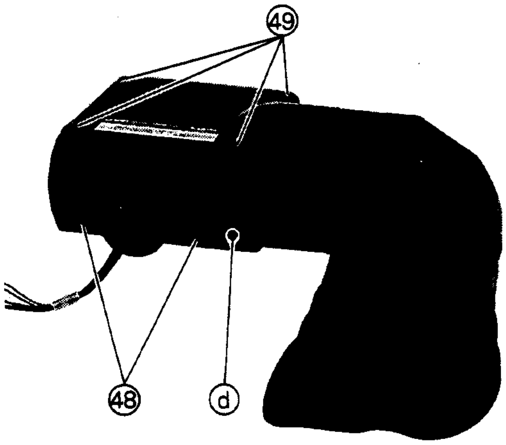


Fig. 1-10-2 Opening of cover

1.10.2 Removing of CRT

1. Open the upper cover referring to the preceding section 1.10.1.
2. Remove two screws ㊿ from on the mirror case ⓔ and then draw the CRT out of the mirror case together with the CRT holder ⓕ.

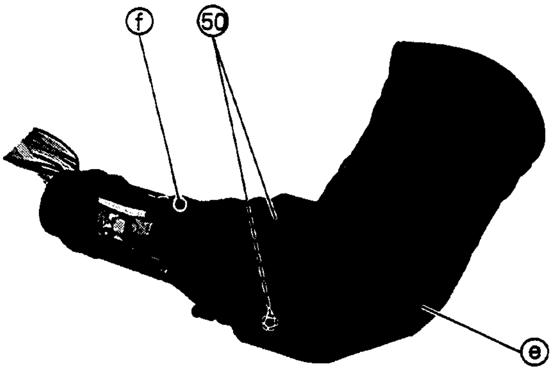


Fig. 1-10-3

3. Remove two screws (51) and unhook the CRT holder from four pawls (52) to open it.

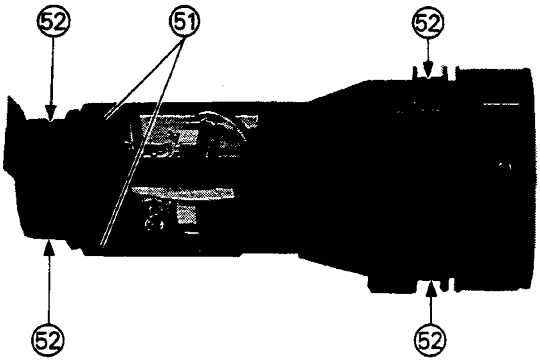


Fig. 1-10-4

4. Draw out the CRT socket ⓖ of the CRT in the direction of the arrow.
5. Connect the anode electrode of the CRT to the chassis or the FBT cover for discharging. After electricity has completely been discharged from the electrode, disconnect the anode plug ⓘ.

> **Note:**
> The anode electrode is hidden by the rubber cover of the anode plug. Most carefully grounding it for discharging not to get an electric shock.

6. Loosen a screw (53) fixing the CRT to the deflecting yoke ⓘ and then draw the CRT out of the deflecting yoke in the direction of the arrow.

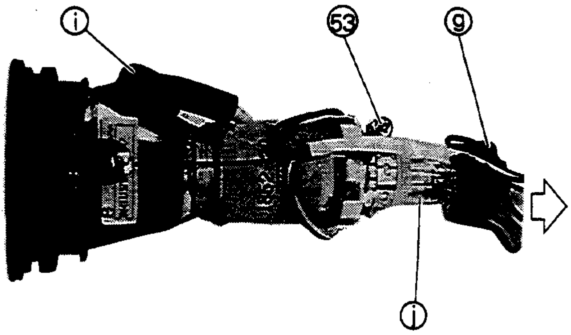


Fig. 1-10-5 Removing of CRT

1.10.3 Removing of boards

1. Remove the cover referring to the section 1.10.1.
2. The HV board and the DEF board are mounted on the back of the bottom cover. (See Fig. 1-10-6.)
3. Disengage two pawls Ⓚ retaining the boards, and the HV board and the DEF board can be removed as they are left connected with each other.

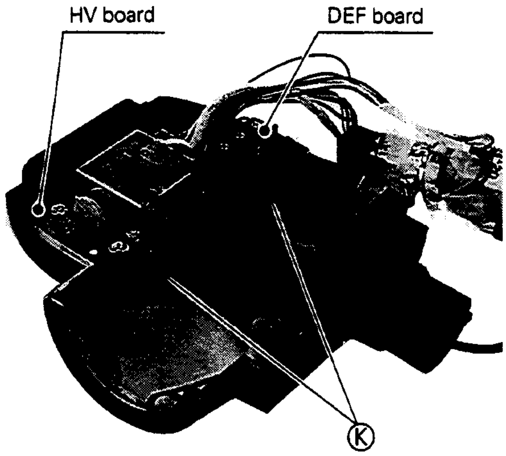


Fig. 1-10-6 Removing of DEF and HV boards

1.11 FUNCTIONS OF INTERNAL SWITCHES

Functions of the switches that are internally mounted on boards are as mentioned below.

1.11.1 Switches on AUCP board

(1) Functions of DIP swith S401

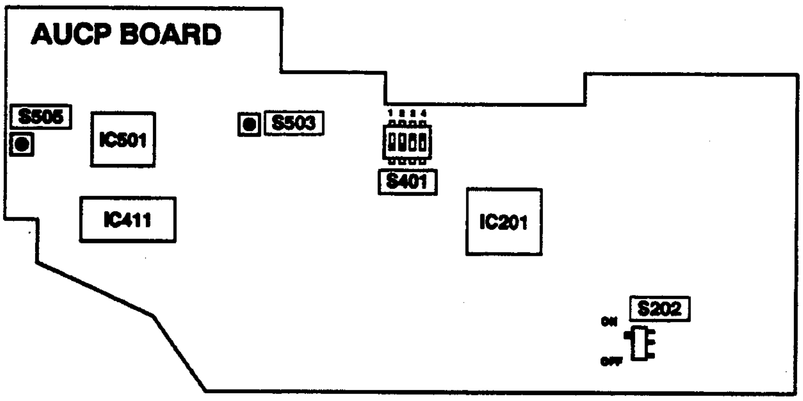


Fig. 1-11-1 AUCP BOARD

DIP switch		Name	Function	Setting on Shipment
S401	1	GAIN	To extend GAIN switch function	OFF
	2	CHECK MODE	To turn on/off CHECK mode for servicing	OFF
	3	ALC/FAW ON/OFF	To turn on/off ALC/FAW function	ON
	4	A. IRIS LEVEL	To switch the iris open end in the AUTO IRIS (ALC, FAS) operation	ON

Table 1-11-1

- **Viewfinder display with ALC/FAW function on**
  When DIP switch S401-3 is set on and the viewfinder's display mode is set to "STATUS 0" with the DISP SELECT button, ALC/FAW function is selective with such the display as shown below appearing in the viewfinder.

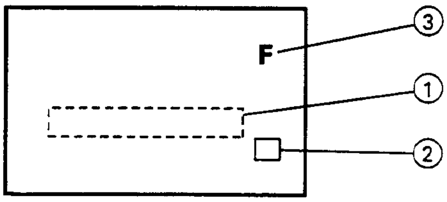


Fig. 1-11-2 Viewfinder

1. ALC+EEI function is added to the function of the GAIN switch (S401-1). In this setting mode "ALC" appears in the place of ② while "GAIN ALC" appears in the place of EVENT indication ①.
2. FAW function is allocated to the W. BAL (white balance) AUTO-2 mode. In this setting mode "F" appears in the place of ③ while "WHITE BAL FAW" appears in the place of EVENT indication ①.

DIP switch S401-3	W.BAL switch setting		
	AUTO1	AUTO2	PRESET
OFF	AUTO1	AUTO2	PRESET
ON	AUTO1	FAW	PRESET

Table 1-11-2

- **Different gain setting with DIP switch**
  Gain selected by the GAIN switch can differently be set with the DIP switch S401-1 in combination with S401-3 as shown below.

Note:
When gain is set to 18 dB with the GAIN and DIP switches, video signal is corrected in the contour and the picture appearing in the viewfinder accordingly contains much noises.

DIP switch setting		GAIN switch setting		
S401-1	S401-3	•	••	•••
OFF	OFF	0 dB	6 dB	9 dB
ON		0 dB	9 dB	18 dB
OFF	ON	0 dB	6 dB	ALC(0 to +12dB)
ON		0 dB	9 dB	ALC(0 to +18dB)

Table 1-11-3

- **Change of effective range of ALC**
  In the AUTO IRIS (ALC, FAS) operation, the iris open end changes depending on setting of the DIP switch S401-4 as in Table 1-11-4.

DIP switch S401-4	IRIS OPEN END
OFF	F2
ON	F1.4

Table 1-11-4

1.11 FUNCTIONS OF INTERNAL SWITCHES

Functions of the switches that are internally mounted on boards are as mentioned below.

Affected serial Nos, 07050593 and before : U version
08050120 and before : E version
(Serial Nos, ****0594 and after (U version) and ****0121 and affer, see the page 1-12 this service manual)

1.11.1 Switches on AUCP board

(1) Functions of DIP swith S401

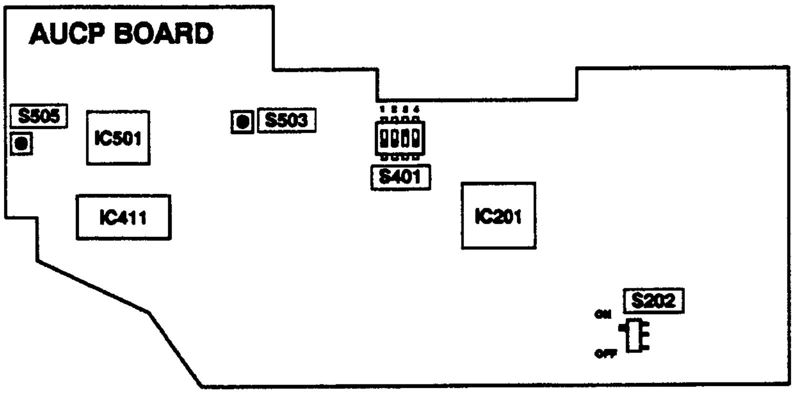


Fig. 1-11-1ADD AUCP BOARD

DIP switch		Name	Function	Setting on Shipment
S401	1	GAIN	To extend GAIN switch function	OFF
	2	CHECK MODE	To turn on/off CHECK mode for servicing	OFF
	3	ALC/FAW ON/OFF	To turn on/off ALC/FAW function	ON
	4	ALC	To select ALC range	OFF

Table 1-11-1ADD

- **Viewfinder display with ALC/FAW function on**
  When DIP switch S401-3 is set on and the viewfinder's display mode is set to "STATUS 0" with the DISP SELECT button, ALC/FAW function is selective with such the display as shown below appearing in the viewfinder.

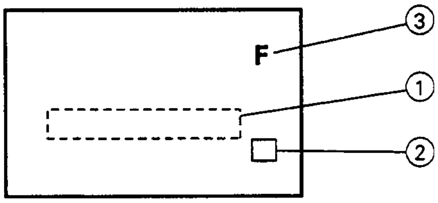


Fig. 1-11-2ADD Viewfinder

1. ALC+EEI function is added to the function of the GAIN switch (S401-1). In this setting mode "ALC" appears in the place of ② while "GAIN ALC" appears in the place of EVENT indication ①.
2. FAW function is allocated to the W. BAL (white balance) AUTO-2 mode. In this setting mode "F" appears in the place of ③ while "WHITE BAL FAW" appears in the place of EVENT indication ①.

DIP switch S401-3	W.BAL switch setting		
	AUTO1	AUTO2	PRESET
OFF	AUTO1	AUTO2	PRESET
ON	AUTO1	FAW	PRESET

Table 1-11-2ADD

- **Different gain setting with DIP switch**
  Gain selected by the GAIN switch can differently be set with the DIP switch S401-1 in combination with S401-3 as shown below.

> **Note:**
> When gain is set to 18 dB with the GAIN and DIP switches, video signal is corrected in the contour and the picture appearing in the viewfinder accordingly contains much noises.

DIP switch setting		GAIN switch setting		
S401-1	S401-3	•	••	•••
OFF	OFF	0 dB	6 dB	9 dB
ON		0 dB	9 dB	18 dB
OFF	ON	0 dB	6 dB	ALC(0 to +12dB)
ON		0 dB	9 dB	ALC(0 to +18dB)

Table 1-11-3ADD

- **Change of effective range of ALC**
  Effective range of ALC is switchable with the DIP switch S401-4 as shown below.

DIP switch S401-4	Effective range of ALC
OFF	0 to +12 dB(S401-1:OFF) or 18dB(S401-1:ON)
ON	0 to +24 dB

Table 1-11-4ADD

- CHECK mode

  The CHECK mode is provided for adjustment of the automatic control system. For detail, refer to the section 3.6.7 "Adjustment of automatic control system".

(2) NORMAL AUDIO LIMITER ON/OFF switch

The normal audio limiter is activated or inactivated in the REC mode by setting of the DIP switch SW202. The limiter level to be switched on/off is the reference level plus 3 dB.

Switch S202	Function	Setting on shipment
OFF	Limiter OFF	ON
ON	Limiter ON	

Table 1-11-5

(3) LCD microcomputer system reset (S505)

This model stores the data shown in the LCD just before the power is turned off in the LCD microcomputer (IC501), and the switch S505 functions to reset the stored data. All the data stored in the LCD microcomputer can be reset by pressing this switch. Pressing the COUNTER RESET switch (S501) and the SELECT switch (S504) together at the same time substitutes for the reset function of the switch S505.

(4) Check of LCD display (S503)

Pressing the switch S503 makes the LCD show all segments. When the LCD lacks in showing all segments, it is probably caused by a failure in connection between the LCD (IC502) and the LCD microcomputer (IC501).

1.11.2 Internal switch on CC board

Contour correction is activated or inactivated by setting of the DIP switch S1 on the CC board.

Switch S1	Function	Setting on shipment
ON	Contour correction ON	ON
OFF	Contour correction OFF	

Table 1-11-6

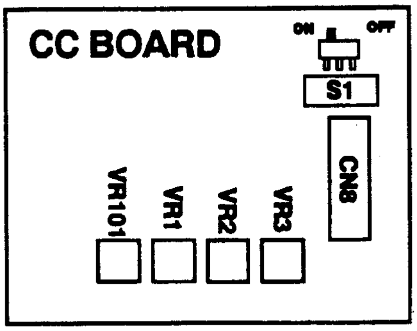


Fig. 1-11-3 CC board

1.11.3 Internal switch on SE board

With the DIP switch S1 set to ON, a test signal (simple color bar signal) is output.

Switch S1	Function	Setting on shipment
ON	Test signal output	OFF
OFF	Camera video output	

Table 1-11-7

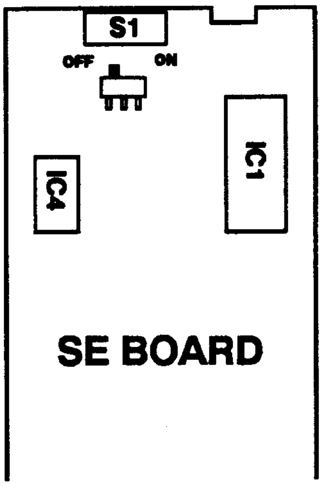


Fig. 1-11-4 SE board

1.11.4 Internal switch on PR2 board

Noise slicing rate of contour signal generated by the CC board can be switched as shown below by changing the setting of the switch S1.

Switch S1	Function	Setting on shipment
6/12	Noise slicing rate is high with the GAIN control set to +6/+12 dB.	6/12
18	Noise slicing rate is high with the GAIN control set to +18 dB.	

Table 1-11-8

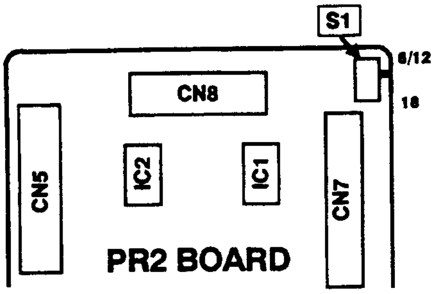


Fig. 1-11-5

1.11.5 System reset

While pressing the SET button in the function box, turn on the POWER switch. This operation resets the system with initialization (setting on shipment) of internal settings related to the CPU as shown in the following table.

Function	Status after system reset
V. SCAN	1/100 (NTSC), 1/50 (PAL)
Display mode	STATUS 0
Max. gain	OFF
Clock display	OFF
Hour display	24 hours system
Date display	Day/Month/Year (NTSC) Month/Day/Year (PAL)
AUTO WHITE 1	Both AUTO WHITE-1 and -2 are in good white balance at a color temperature of 3200K.
AUTO WHITE 2	

Table 1-11-9

1.12 MANUAL TAKING-OUT OF CASSETTE IN AN EMERGENCY

When the deck falls into the AUTO OFF status and the cassette tape cannot be ejected, take it out manually according to the following procedure.

1. Turn off the set.
2. Remove the cassette cover so as to be able to see the cassette tape condition.
3. Open the left side cover.
4. Open the right side cover referring to the section 1.6.2.
5. Remove the VIDEO board first and S/S board next.
6. Turn the pulley of the loading motor on the back of the mechanism deck with a screwdriver or the like, and the cassette tape is gradually unloaded. (See Fig. 1-12-1.)
7. If the tape becomes loose, turn the pulley of the clutch mechanism to wind the tape to take in the slack of it.
8. Repeating the preceding steps 6 and 7, rewind the tape until it reaches the position for the STOP mode.
9. In the STOP mode, slide the lock plate or the lock plate's pin that is locking the cassette housing in the arrow direction to eject the cassette tape.(see Fig. 1-12-2)

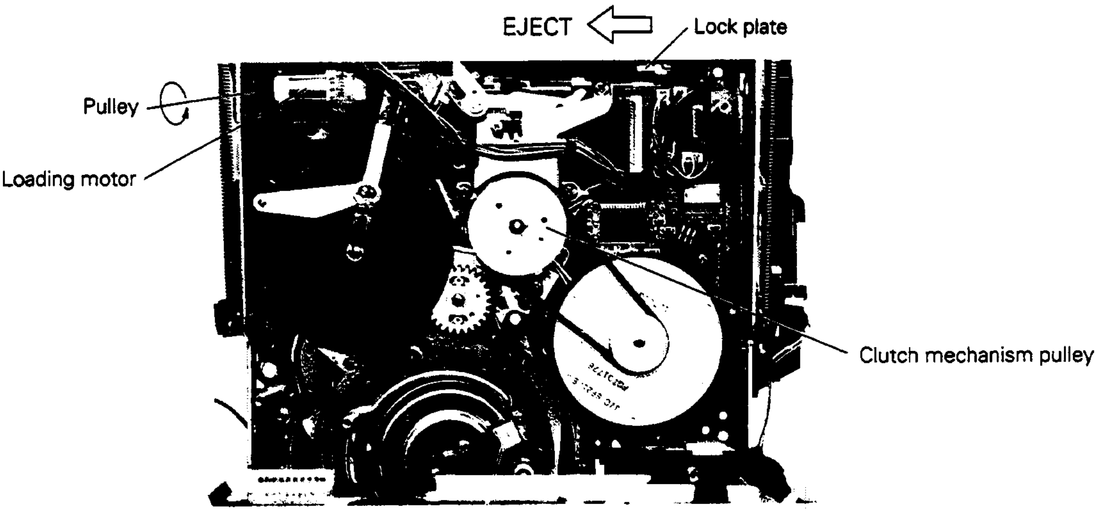


Fig. 1-12-1 Back side of deck

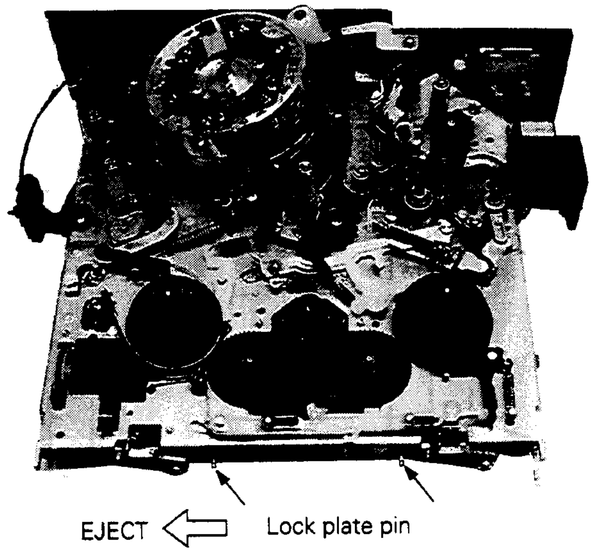


Fig. 1-12-2

1.13 TRIPOD BASE

The tripod base that is an accessory of this set and equivalent to the tripod base KA-510 won't be supplied separately from the set.

The tripod base of this set is equivalent to the model KA-510. This tripod base differs from the KA-510 in number of tapped holes for mounting the camera on a tripod (Refer to Fig.1-13-1). When the tripod base of this set needs service, refer to the service manual (No. 60065) for the KA-510.
If the user wants a finished article, recommend him to purchase the KA-510 optionally.

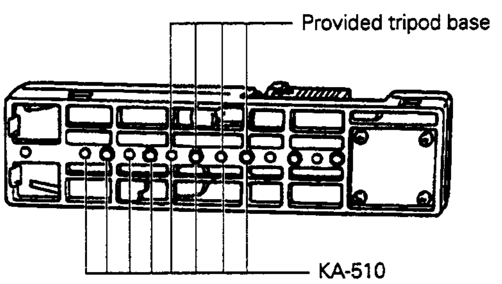


Fig. 1-13-1 Tapped holes to mount camera on tripod

1.14 CAUTION ON CALLING HOUR METER ONTO DISPLAY

If the following message appears in the display in reply to calling the hour meter, it indicates that there is no room in the effective domain of the EEPROM (IC21 of the S/S board). In such a case, replace the EEPROM with new one.
Data of the hour meter is reset with replacement of the EEPROM.
This EEPROM allows writing data 100,000 times at maximum.

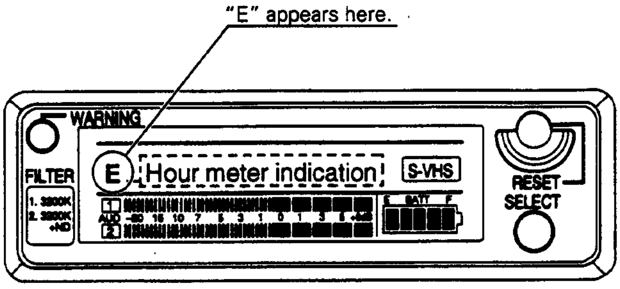


Fig. 1-14-1

1.15 WARNING MESSAGES

The GY-X3 has a comprehensive array of warning indicators.The following chart summarises the operation of the warning system.

Waring	Remarks	Warning indications			VCR operation	Warning status detection method
		WARNING LED	Display	View finder indications		
SERVO LOCK	Head drum and capstan are not locked during recording. No video signal input. (in Rec)	⊛	SERVO LOCK	"SERVO"	Continues.	•When IC25 pin ① on the S/S board is at "L" level. •When IC25 pin ⑥ on the S/S board is at "L" level.
AUTO OFF	Drum/capstan/reel malfunctions. Mechanism is abnormal.	⊛	AUTO OFF	"HARD"	OPERATE OFF after 10 seconds.	•When either of IC17 pin ㉕ (D. FF), pin ⑥, ⑦ (REEL FG), pin ⑮ (CAP FG) on the S/S board has no input. •When mechanism is not shifted to another mode within a specified period of time. •When either of IC25 pin ④ (AL SW), IC19 pin ④, ⑬ (MODE SENSOR 1, 2) on the S/S board detect whether mechanism mode shifft is performed within the specified time or not.
DEW	Condensation warning.	⊛	DEW	"DEW"	Stops. All controls become inoperative except EJECT.	•When IC25 pin ⑤ on the S/S board is at "L" level.
TAPE END	About 3 minutes before tape end. (in Rec)	◑	——	"TAPE NEAREND"	Continues.	•Detected with signals of IC17 pin ⑮ (CAP FG) and pins ⑥, ⑦ (REEL FG) on the S/S board. •Stopped when IC17 pin ④ (END SENSOR) becomes at "H" level.
	Tape end.	◑	——	"TAPE END"	Stops.	
BATTERY	Slightly before the battery is exhausted.	——	E BATT F ▮▮▯▯▯	E BATT F ▮▮▯▯▯	Continues.	•Voltage is checked at IC17 pin ① on the S/S board. •When DC IN (BATT) voltage drops down to 11.1 V, warning is turned on. Moreover, when the voltage drops down by another 0.6 V, operation is switched off.
	Battery exhausted.	——	E BATT F ▯▯▯▯▯	E BATT F ▯▯▯▯▯	OPERATE OFF after Record-Pause.	

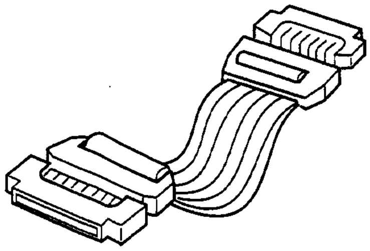
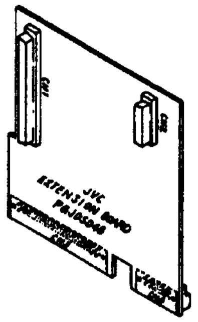
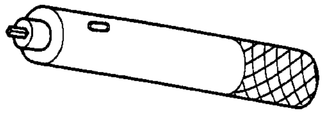
⊛ : Blinks 4 times a second ◑ : Bilinks once a second

1.16 PERFORMANCES PECULIAR TO THIS MODEL

The following phenomena that may sometimes occur in operation are not faulty but within the specifications.

1. When the FAS function is activated, the shutter is forced to enter the EEI mode and the V. SCAN switch is accordingly out of order. Therefore, shooting under the fluorescent light may get the picture flickered.
2. The light of LCD cannot be turned off.
3. Oscillation sound may beheard because the DC-DC converter of the power supply oscillates at a frequency of 7.5 kHz.

1.17 SPECIAL IMPLEMENTS FOR SERVICE

1 CCD BLOCK EXTENSION CABLE	2 EXTENSION BOARD	3 LENS LOCK TOOL
〈Part No. SCM 0732〉 	〈Part No. PGJ 05046〉  (for S/S, SE board)	〈Part No. SC45961〉 

SECTION 2
MECHANISM ADJUSTMENT FOR VTR SECTION NTSC/PAL

***Note:** The numbers of screws and slit washers shown back of this section respectively accord with numbers of them appearing in this section.*

2.1 PREPARATION

2.1.1 Precautions

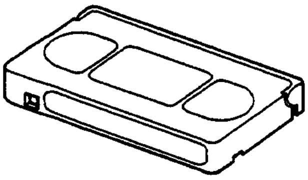
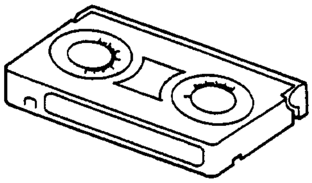
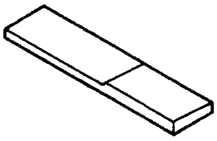
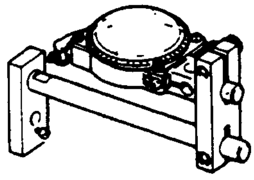
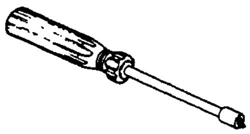
(1) When using a soldering iron, disconnect the power cord after heating it.
(2) When disconnecting connectors, do not pull connector cables by a strong force.
(3) Do not disturb adjusting parts such as screws thoughtlessly as there is a trouble of unknown reason.

2.1.2 Jigs and special tools for mechanism adjustment

For mechanism adjustment, the following jigs and special tools are required.

2.1.4 Oil and Grease

Item	Name	JVC Part No.
Oil	Cosmo Hydro HV56	COSMO-HV56
<General spindle oil (low viscosity) is substitutable>		
Grease	Moriton Grease (black)	MOS2-C
	Floil (light brown)	KANTO-GB-TS-1
	Beacon-325 (cream)	PGJ04040

Alignment tapes NTSC-MHP,MBP-X,MH-F6/ PAL-MHPE,MBPE-X,MH-F8	Cassette torque meter (or tentelometer) PUJ42881 (PGJ04020)	Parallel check plate PUJ50204(0.1mm)/PGJ04039(0.15mm)	Microchecker PUJ49712-2
			
Taper nut driver PUJ50637	Microchecker attachment PGJ04006		
			

- **General tools required besides above special tools**
- Nut-driver (7 mm)
- Hex. key (0.9 mm, 1.27 mm)
- Ordinary (+) screwdrivers [PGJ04037(3 mm), PGJ04038(2.6 mm)]

Table 2-1-1 Jigs and special tools

2.1.3 Specifications of alignment tapes

·MHP(NTSC)/MHPE(PAL)

Video signal	Normal audio signal	Application	Remark
VHS SP mode Stairstep	7(6)kHz	•For check adjustment of interchangeability. •For adjustment of PB switching point.	MH-1(2) stairstep signal substitutable.

·MBP-X(NTSC)/MBPE-X(PAL)

Video signal	Normal audio signal	Application	Remark
Stairstep (1 field no-recording every 5 frames.)	7(6)kHz	For rough adjustment of X-value.	Only MHP(E)-X part name changed.

·MH-F6(NTSC)/MH-F8(PAL)

No.	PB time	Video signal	Hi-Fi audio signal	Application
1	5 minutes	–	Carrier only	Check and adjustment of interchangeability of mechanism.
2	5 minutes	Stairstep	Carrier only	Check and adjustment of interchangeability of mechanism.
3	5 minutes	–	1kHz (±50kHz DEV)	Check and adjustment of FM audio PB circuit.

2.2 PERIODIC REPLACEMENT OF MAIN PARTS

Periodic inspection and maintenance are needed in order to ensure performance and reliability. The following table has been compiled simply to give a general idea regarding maintenance and inspection.

In practice, the periods indicated will vary widely according to environmental and usage conditions. Also be aware that rubber parts may deform and age even when the equipment is not used.

	No. *1	Part Name	Part No.	Standard service period *2										Ref. section	Remarks
				500	1000	1500	2000	2500	3000	3500	4000	4500	5000		
Tape transport system	①	Tension pole assy	PRD43771A-03	★	★	★	★	★	★	★	★	★	★	—	
	②	Impedance roller	PRD44135-01-01											—	
	③	SP. pole base assy	YQ40653B											—	
	④	TU. pole base assy	YQ40509D											—	
	⑤	TU. guide pole Lower flange	PRD43733 PRD44094											—	
	⑥	Capstan shaft	—											—	
	⑦	Guide arm assy	PQ40993B											—	
	⑧	Full erase head assy	PRD43795A-01	★	★	★	★	★	★	★	●	★	★	2.3.8	
	⑨	A/C head	PGZ02120	★	★	★	★	★	★	★	●	★	★	2.3.7	Excluding A/C head board
	⑩	Pinch roller	PQ41125A	★	★	★	●	★	★	★	●	★	★	2.3.5	
	⑪	Drum assy	PDR2013A	★	★	★	★	★	○/★	★	●	★	★	2.3.9	
	⑫	Upper drum assy	PRD20443E	★	●	★	●	★	●	★	↑	★	●	2.3.1/2.3.2	Included in Drum assy
Driving system	⑬	Capstan motor	PGZ01728-01-01								●			2.3.11	
	⑭	Reel belt	PQM30003-12				○				●			2.3.11	
	⑮	Loading motor	PGZ01939								●			2.3.10	
	⑯	Loading belt	PRD30022-19				○				●			2.3.10	
	⑰	SP. reel disk	PGZ01341				△				○/△			2.3.13	
	⑱	TU. reel disk	PGZ01342				△				○/△			2.3.14	
	⑲	Search brake assy	PQ40858B								●			2.3.6	
	⑳	REW brake assy	PQ40860B-3								●			2.3.6	
	㉑	FF brake assy	PRD44028A								●			2.3.6	
	㉒	SP. clutch	YU40427								○			2.3.13/2.5.1	*3
	㉓	TU. clutch	PU56650-1-4								○			2.3.14/2.5.2	*3
Others	㉔	Brush assy	YU40548-1-1				●				●			2.3.12	
	㉕	Tension band assy	PQ40851B				●				●			2.3.4/2.5.1	*4
	㉖	Head cleaner	PQ44837		●		●		●		●		●	2.3.3	Not included in Drum assy

*1 Symbol numbers correspond to numbers in Fig. 2-2-1.
*2 Know the standard service period by hour meter.
*3 Check torque at every servicing.
*4 Check back tension at every servicing.

★=Cleaning.
○=Check and Replace if necessary, or Check and Clean.
●=Replacement.
↑=Same as above.
△=Oiling.

2.2.1 Location of main parts

Note: Symbol numbers correspond to numbers in the table on page 2-2.

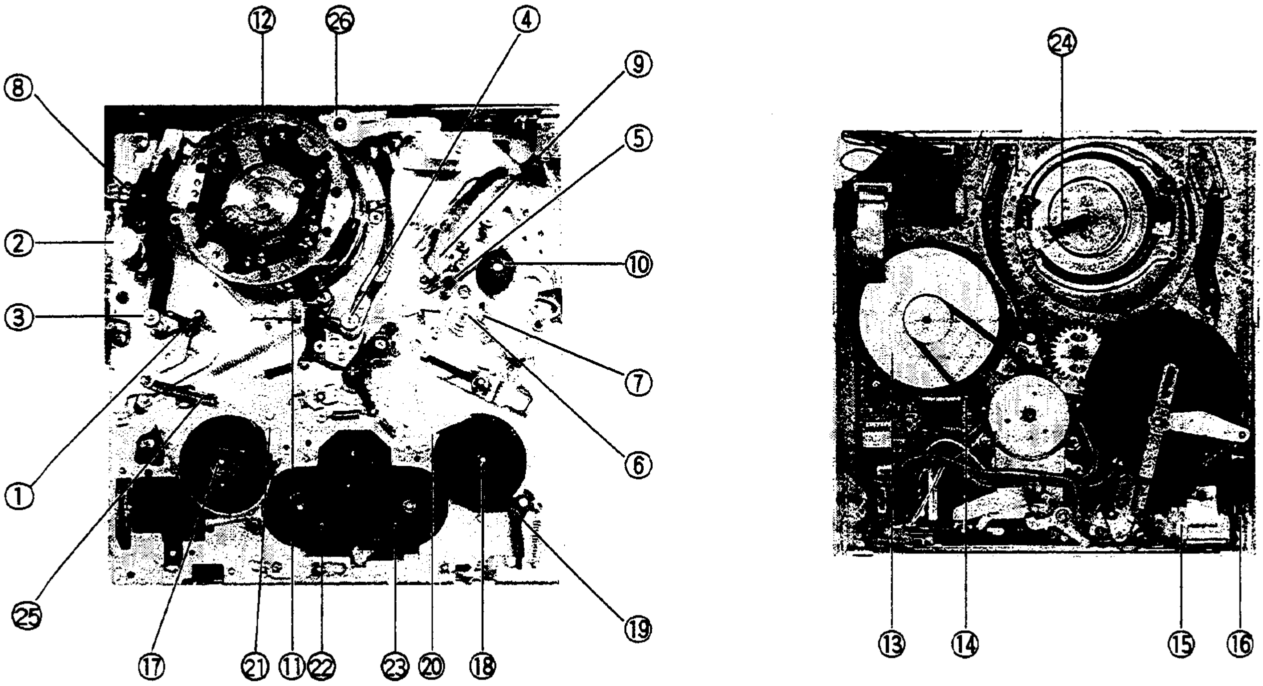

⑫
㉖
④
⑧
⑨
⑤
②
⑩
③
⑦
⑥
①
⑲
㉕
⑰
㉑
⑪
㉒
㉓
⑳
⑱
㉔
⑬
⑭
⑮
⑯

Fig. 2-2-1

2.2.2 Maintenance step of main parts

Check, and replace if necessary.

Replace.

Adjustment after replacement.

1. 1000H, 3000H and 5000H maintenance

START

At 3000H only
Check the drum assy (see 2.6.3).

Replace the Head cleaner (see 2.3.3).

Replace the Upper drum assembly (see 2.3.1).

No.	Adjustment item	Ref. Sec.
①	Clean the tape transport system.	2.2.5
②	Adjustment required after replacement of the drum assembly.	2.2.3

FINISH

2. 2000H maintenance

START

Check the Reel belt
Cracks and dusts are not observed in the appearance.

Check the Loading belt
Cracks and dusts are not observed in the appearance (see 2.3.10).

Replace the Pinch roller (see 2.3.5).

Replace the Tension band assembly (see 2.3.4, 2.5.1).

Replace the Head cleaner (see 2.3.3).

Replace the Upper drum assembly (see 2.3.1).
Replace the Brush assembly (see 2.3.12).

No.	Adjustment item	Ref. Sec.
①	Check the tape transport system.	2.7
②	Clean the tape transport system.	2.2.5
③	Confirm the Tension pole adjustment.	2.5.1
④	Confirm centering and relative height.	2.3.2 2.3.1
⑤	Adjustment required after replacement of the drum assembly.	2.2.3

FINISH

3. 4000H maintenance

START

Check the SP. and TU. clutch (see 2.3.13, 2.3.14).
Check the SP. and TU. reel disk (see 2.3.13, 2.3.14).

Replace the Loading motor (see 2.3.10).
Replace the Loading belt (see 2.3.10).

Replace the Pinch roller (see 2.3.5).

Replace the FF brake (see 2.3.6).
Replace the REW brake (see 2.3.6).
Replace the Search brake (see 2.3.6).

Replace the Tension band assembly (see 2.3.4, 2.5.1).

Replace the Full erase head (see 2.3.8).

Replace the Capstan motor (see 2.3.11).
Replace the Reel belt (see 2.3.11).

Replace the A/C head (see 2.3.7).

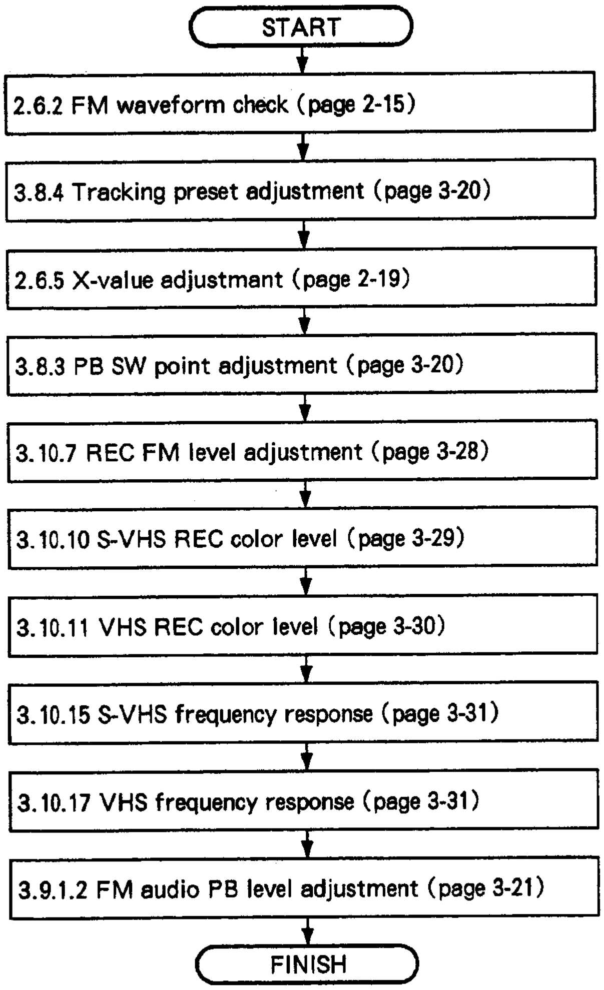
Replace the Drum assembly (see 2.3.9).
Replace the brush assembly (see 2.3.12).

Replace the Head cleaner (see 2.3.3).

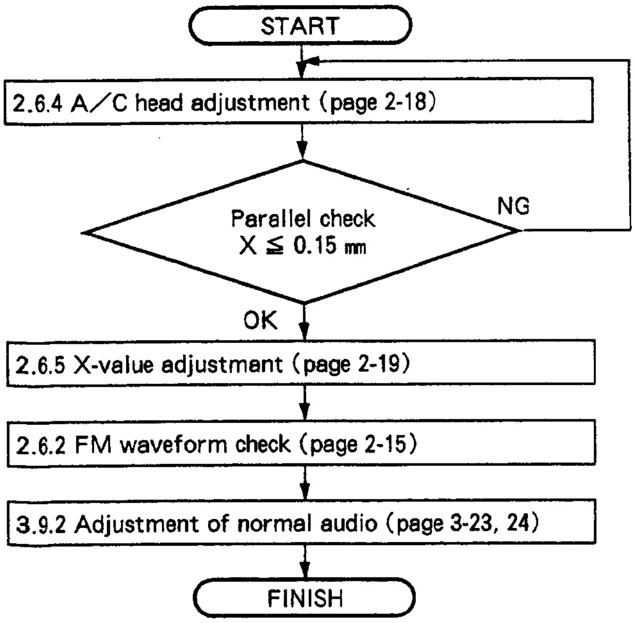
No.	Adjustment item	Ref. Sec.
①	Check the tape transport system.	2.7
②	Clean the tape transport system.	2.2.5
③	Confirm the Tension pole adjustment.	2.5.1
④	Adjustment required after replacement of the A/C head.	2.2.4
⑤	Adjustment required after replacement of the drum assembly.	2.2.3

FINISH

2.2.3 Adjustments required after replacement of drum assembly


START
2.6.2 FM waveform check (page 2-15)
3.8.4 Tracking preset adjustment (page 3-20)
2.6.5 X-value adjustmant (page 2-19)
3.8.3 PB SW point adjustment (page 3-20)
3.10.7 REC FM level adjustment (page 3-28)
3.10.10 S-VHS REC color level (page 3-29)
3.10.11 VHS REC color level (page 3-30)
3.10.15 S-VHS frequency response (page 3-31)
3.10.17 VHS frequency response (page 3-31)
3.9.1.2 FM audio PB level adjustment (page 3-21)
FINISH

2.2.4 Adjustments required after replacement of A/C head


START
2.6.4 A/C head adjustment (page 2-18)
Parallel check
X ≦ 0.15 mm
NG
OK
2.6.5 X-value adjustmant (page 2-19)
2.6.2 FM waveform check (page 2-15)
3.9.2 Adjustment of normal audio (page 3-23, 24)
FINISH

2.2.5 Cleaning

Although periodical cleaning of parts of the tape transport system is desirable, it is almost impossible to put it into practice. Therefore, it is strongly recommended to clean the tape transport system when a set is brought in to undergo repair and check. For cleaning use fine woven cotton cloth moistened with ethyl alcohol.

(1) Video heads
Dirty video heads get playback picture rough and invisible in the extreme case.
For cleaning the video head, lightly press quality paper moistened with ethyl alcohol to the upper drum by finger while turning the upper drum.
Note: Since the video head is weak against vertical force (applied in the up-down direction), moving of cleaning paper may possibly damage the video head.

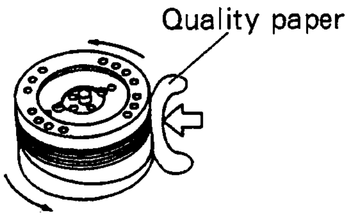

Quality paper

Fig. 2-2-2 Cleaning of Upper drum

(2) Tape guides
Dirty tape guides not only increase video heads in getting dirty much more but also cause damage to tape.

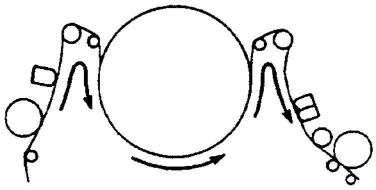


Fig. 2-2-3 Tape guides

(3) Brush
Dirty and dusty brush causes horizontal snow noise in playback picture.

(4) A/C head and FE head
For cleaning them, scrub the head with an applicator moistened with ethyl alcohol.

2.2.6 Oiling and greasing

If oil or grease on the other party is old and dirty, wipe it off and apply new oil or grease to it, too.

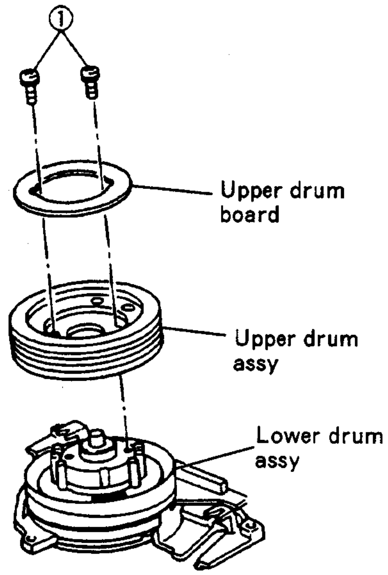
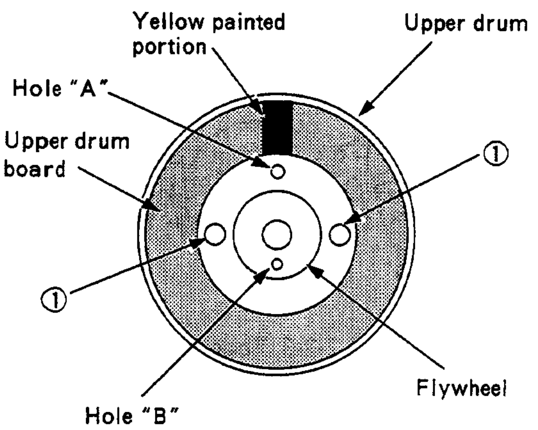
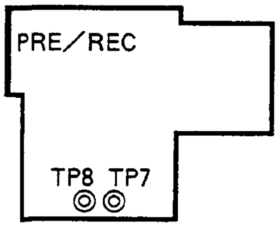
(1) Oil and grease used for this set are as follows.

Item	Name	JVC Part No.
Oil	Cosmo Hydro HV56	COSMO-HV56
<General spindle oil (low viscosity) is substitutable>		
Grease	Moriton Grease (black)	MOS2-C
	Floil (light brown)	KANTO-GB-TS-1
	Beacon-325 (cream)	PGJ04040

(2) Apply grease every 4000 hours of operation or taking an opportunity of parts replacement.

2.3 REPLACEMENT OF MAIN PARTS

***Note:** For parts replacement, take out the cassette panel assembly and the left side cover assembly (see 1.6.1, page 1-2).*

No.	Item	Adjustment and Check
1	**Upper drum assembly** — **Removal** —  Fig. 2-3-1 Removal of Upper drum	***Note:** • When re-installing the upper drum assembly, put it right down on the lower drum assembly with care not to touch the heads.* *• For cleaning the heads, press quality paper moistened with alcohol to the drum head with fingers while turning the upper drum assembly counterclockwise. At that time, do not move cleaning paper nor the upper drum vertically to each other.* (1) Set the cassette housing to the EJECT condition while remove the cassette panel and the left side cover assembly (see 1.6.1, page 1-2). (2) Remove the PRE/REC board assy (see 1.7.7, page1-8). (3) Unsolder the relay pin terminal of the Upper drum board and remove the board. (4) Remove two screws ① and lift the upper drum upwards to detach it.
	— **Reinstallation** —  Yellow painted portion Upper drum Hole "A" Upper drum board ① ① Flywheel Hole "B" Fig. 2-3-2 Reinstallation of Upper drum and board	***Note:** Proceed to the following reassembling very carefully not to touch and damage the drum head.* (5) Clean the contact surfaces of the upper drum assembly and the lower drum assembly with alcohol. ***Note:** Dusty contact surface causes maladjustment of the relative height of the heads. If the relative height of the heads is incorrect, the maximum positions of the CH-1 and CH-2 FM waveforms are observed different from each other when vary with the tracking control.* (6) Install the upper drum assembly so that the hole "A" of the upper drum assembly and the hole "B" of the flywheel are positioned to each other at an angle of 180° . (7) Tighten two screws ① evenly. (8) Check right centering of the upper drum (see 2.3.2, page 2-7) (9) Put the UPPER DRUM board on the upper drum assembly so that the yellow painted portion of the board and the hole "B" of the flywheel are positioned to each other at an angle of 180° and solder the board. (10) Clean the drum assembly on the whole (particularry the upper drum). (See 2.2.5, page 2-5.)
	— **Check and Adjustment** — — Location of TPs —  TP7: V-FM TP8: D-FF	(11) Check the relative height according to the following procedure. ① Set the alignment tape MHP(NTSC)/MHPE(PAL) and connect an oscilloscope's probe with TP7 on PRE/REC board while connecting its other probe with TP8 on PRE/REC board for external trigger. ② Adjust the tracking control to confirm that waveforms of CH-1 and CH-2 simultaneously become maximum. ③ When they extremely differ from each other in the level or time, remove the upper drum to clean its bottom surface and the upper surface of the lower drum's flywheel. repeat the above steps reinstallation. (12) Perform the adjustments required after replacement of the drum assembly as described in 2.2.3, page 2-5.

No.	Item	Adjustment and Check
2	**Centering of upper drum**	

If the upper drum is so installed as its center is off the center of the drum shaft, it causes jitters and other troubles. This matter (item) generally not check, however, when jittter remarkably appears in the picture, check neither wobbling in the upper drum rotation nor eccentricity of its shaft.

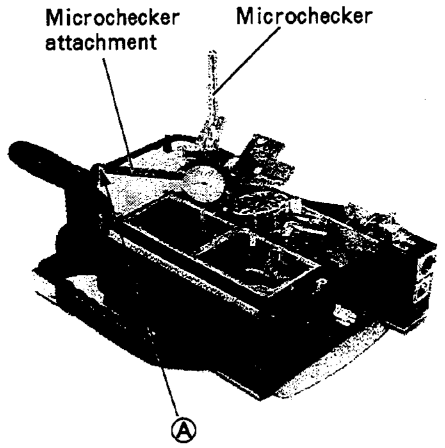


Fig. 2-3-3 Position of Microchecker installation

Cautions to handle microchecker

① Keep the microchecker out of any shock or vibration since it is high precision instrument.

② Do not apply unnecessary force to the probe.

③ Although the outer ring of the micrometer is turnable approximately in a range of ± 10 graduations, do not turn it with strong force (more than 300g-cm).

④ Be careful not to touch the probe with video heads directly.

⑤ When setting the microchecker, make sure that the probe always orientates the center of the drum for working.

⑥ If rubbing or grating sound occurs in measuring, it results from abnormal contact of the probe. In such a case, check the upper drum and the tip of the probe whether dust or other contamination is on them, or not.

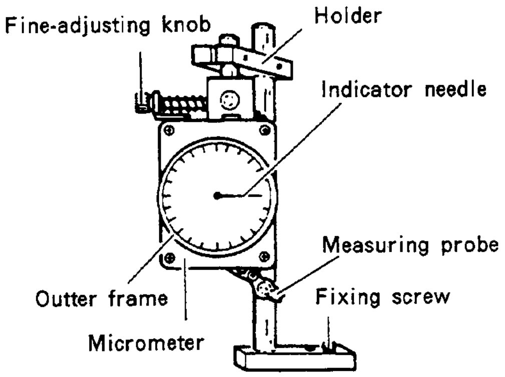


Fig. 2-3-4 Microchecker : PUJ49712-2

(1) **Required tool:**
- Screw:SDSP3006Z
- Microchecker:PUJ49712-2
- Microchecker attachment:PGJ04006

(2) Remove the PRE/REC board assy (see 1.7.7, page1-8).

(3) Set the microchecker attachment on the panel by the portion Ⓐ with a SDSP3006Z screw.

(4) Carefully set the micrometer not to knock it against the upper drum.

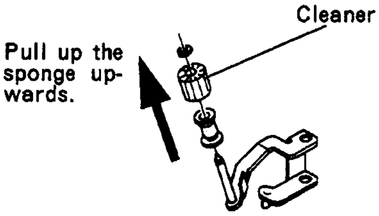
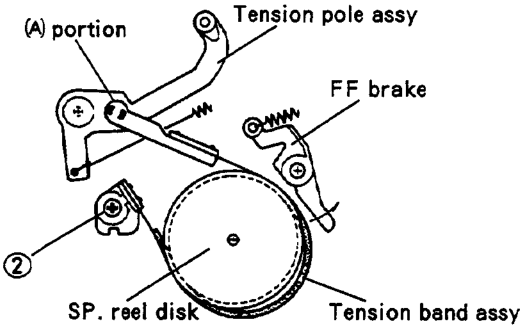
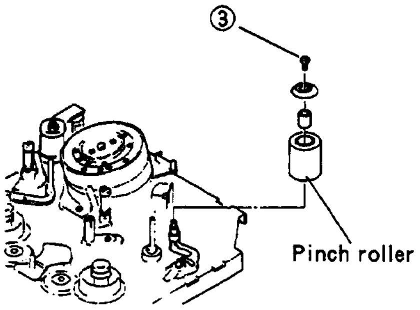
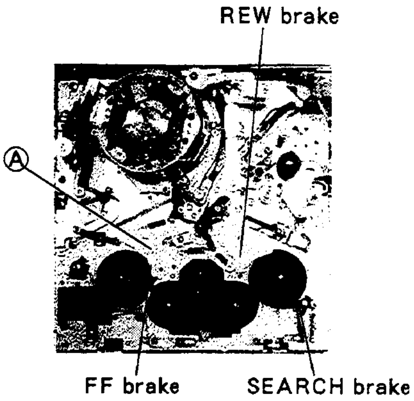
(5) Slowly turn the micrometer's fine-adjusting knob clockwise until the indicator reads "0". The outer ring is usable for this adjustment in a range of ± 10 graduations at maximum. Do not turn it further than this range.

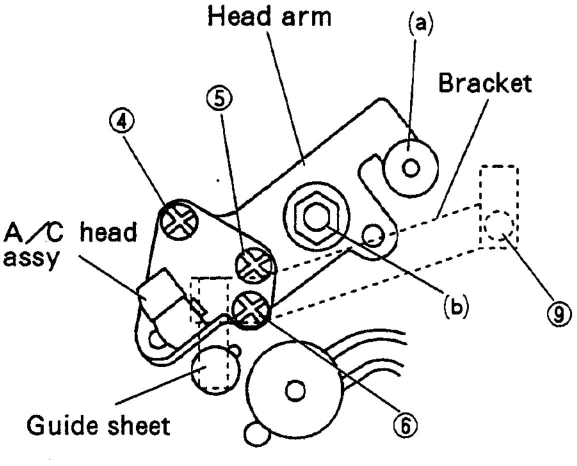
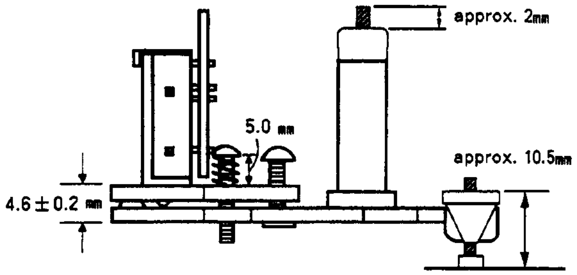
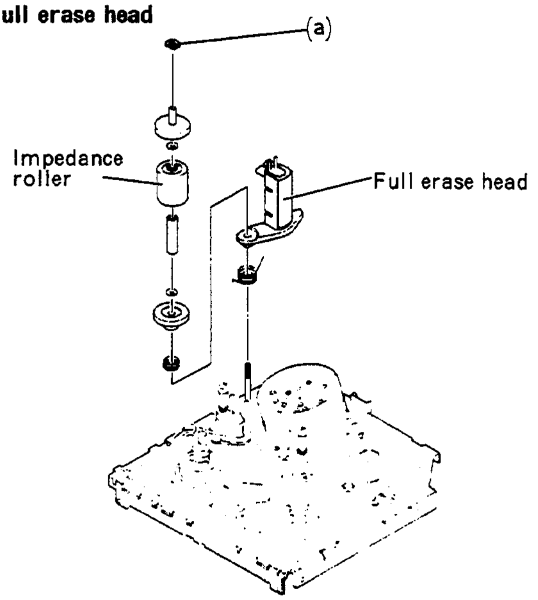
(6) Being very careful not to apply any lateral pressure to the upper drum, turn it gently (with a paper string, for example). At that time, it is a minimum requirement that the pointer shakes in a range of ±1.5 micron.

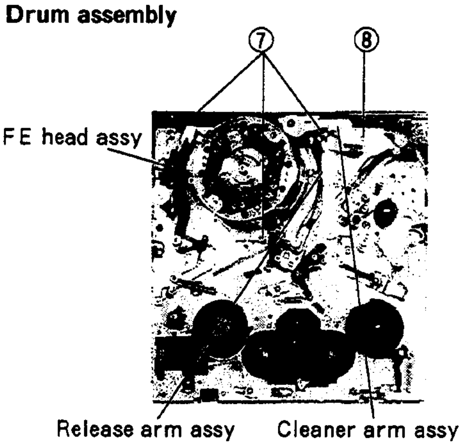
(7) If the pointer shakes more than ±1.5 micron, turn the micrometer's fine-adjusting knob counterclockwise to release the probe from contact. Loosen two screws retaining the upper drum while fine adjusting the setting position of the upper drum, then tighten the screws again.

(8) Again check deflection in the center of the upper drum and adjust the centering until the micrometer's pointer just shakes in a range of ±1.5 micron.

(9) Turn the microchecker's fine-adjusting knob counterclockwise, then remove it.

No.	Item	Adjustment and Check
3	**Head cleaner**  Cleaner Pull up the sponge upwards. Fig. 2-3-5 Removal of Head cleaner	(1) Pull up the cleaner (sponge) a little while taking it out. (2) Replace it with a new cleaner in the reverse order of removing.
4	**Tension band assy**  (A) portion Tension pole assy FF brake ② SP. reel disk Tension band assy Fig. 2-3-6 Removal of Tension band	(1) Remove the cassette housing assy (see 1.8, page1-8). (2) Remove a screw ② and disengage the tension band from the (A) portion of the tension pole assy. (3) Operate the FF brake while taking out the tension band. (4) Engage a new tension band in the original position. (5) After replacement, check and adjust the tension pole position and back tension (see 2.5.1, page 2-14).
5	**Pinch rollor**  ③ Pinch roller Fig. 2-3-7 Removal of Pinch roller	(1) Remove a screw ③ and detach the pinch roller and its peripheral parts. (2) Install a new pinch roller and fix the collar and the pinch roller cap with the screw.
6	**FF, REW, SEARCH brake assembly**  REW brake Ⓐ FF brake SEARCH brake Fig. 2-3-8 Removal of brakes	(1) **– REW, SEARCH brake –** Lift the REW and SEARCH brake assemblies upwards with radio penuche or the like while press the locking pawl of them. (2) **– FF brake –** Remove a slit washer Ⓐ and lift the FF brake upwards while taking it out.

No.	Item	Adjustment and Check
7	**A/C head assembly** **— Removal —**  Head arm (a) Bracket ⑤ ④ A/C head assy (b) ⑨ Guide sheet ⑥ Fig. 2-3-9 Removal of A/C head	(1) **Required implements:** •Taper nut driver : PUJ50637 (2) Disconnect the connector from the A/C head board. (3) Remove a screw ⑨ and release the bracket. (4) Remove a taper nut (a). (5) Remove a nut (b) and take out the A/C head assy with the head arm. (6) Remove three screws ④, ⑤ and ⑥, then remove the A/C head with careful attention to a spring under the screw ⑥ not to lose it. (7) Unsolder the A/C head board and remove it. ***Note: If the guide sheet is removed, make sure to fix the guide sheet tightly, otherwise it may cause tape damage, etc.***
	— Reinstallation —  Fig. 2-3-10 Temporarily adjust the height	(1) Reassemble the A/C head and the peripheral parts in the reverse order of removing. (2) Before setting the A/C head on the main deck, temporarily adjust the height of the A/C head as shown in Fig. 2-3-10.
	— Check and Adjustment —	(1) Perform the adjustments required after replacement of the A/C head assembly as described in 2.2.4, page 2-5.
8	**Full erase head**  Fig. 2-3-11 Removal of Full erase head	(1) Remove the PRE/REC board assy (see 1.7.7, page1-8). (2) Remove an "E. ring" (a), and detach the impedance roller and its peripheral parts while release the PRE/REC board bracket. (3) Disconnect the connector from the FE head. (4) Remove a spring and take out the FE head upwards for replacement. ***Note:Pay attention to the washer installed underneath the impedance roller.*** (5) Set a new FE head properly and install the impedance roller and peripheral parts. (6) After replacement, clean the tape transport system (see 2.2.5, page 2-5).

<table>
<tr><th>No.</th><th>Item</th><th>Adjustment and Check</th></tr>
<tr><td>9</td><td>Drum assembly


⑦
⑧
FE head assy
Release arm assy
Cleaner arm assy

Fig. 2-3-12 Removal of the drum assy</td><td>(1) Remove the compoments in the following order.
The left side cover assembly (see 1.6.1, page 1-2).
The PRE/REC board assembly (see 1.7.7, page 1-8).
(2) Remove a screw ⑧ and take out the cleaner arm assembly.
(3) Remove three screws ⑦ and draw out the drum assembly diagonally to the front side trying to avoid the FE head assembly and release arm assembly.
(4) With careful attention to the drum assembly to prevent it from getting damaged, install a new drum assembly in the reverse order of disassembly. Tighten screws evenly.
(5) Perform adjustments required after replacement of the drum assembly (see 2.2.3).</td></tr>
<tr><td>10</td><td>Loading motor
Loading belt

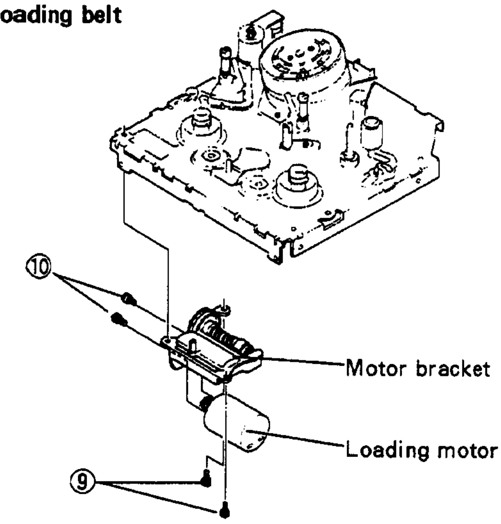



Fig. 2-3-13 Removal of the loading motor and belt</td><td>(1) Remove the compoments in the following order.
The right side cover assy (see 1.6.2, page 1-3).
The video board, the S/S board, the SE board and the M JUNC board (see 1.7.3-1.7.6, page 1-7, 8).
(2) Disconnect the CN6 from the M.IF board.
(3) Remove two screws ⑨ and take out the motor bracket.
(4) Remove two screws ⑩ and unsolder wires from the loading motor.
(5) Disengage the loading belt and take out the loading motor.
(6) Install a new loading belt and a new loading motor in the reverse order of the removal. When wiring, pay attention to the polarity of wires.
<table><tr><th>Poles of motor</th><th>Color of wire</th></tr><tr><td>+
(Red marking)</td><td>Red</td></tr><tr><td>−</td><td>Gray</td></tr></table>Fig. 2-3-14 Polarity of the loading motor</td></tr>
<tr><td>11</td><td>Capstan motor

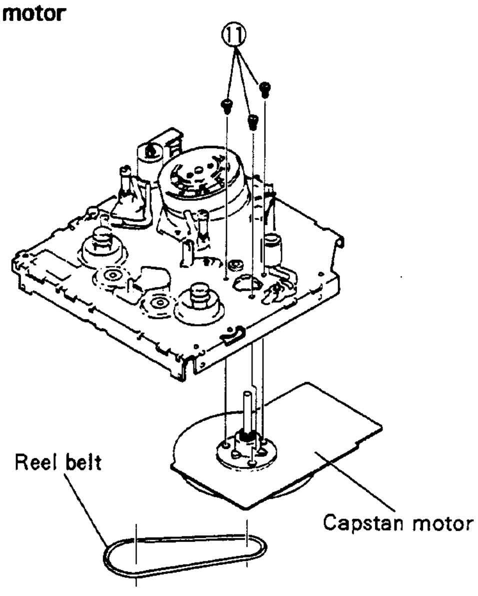
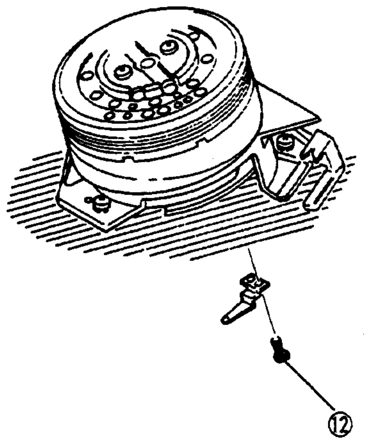
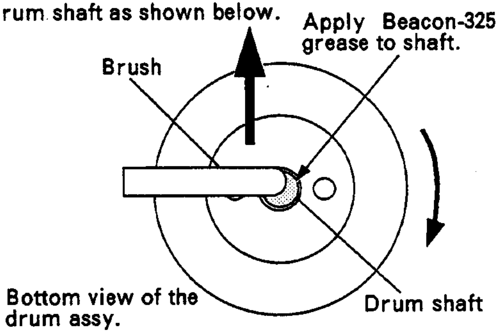
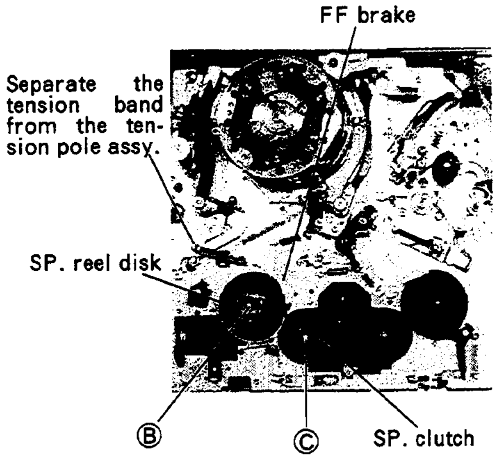
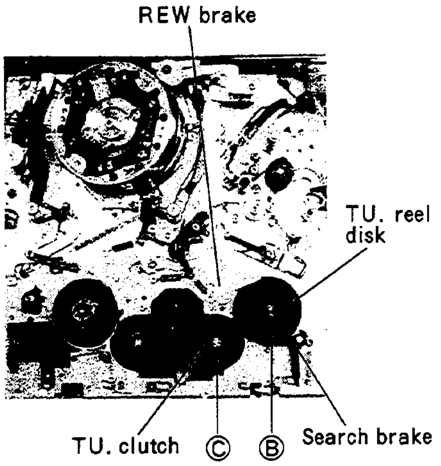
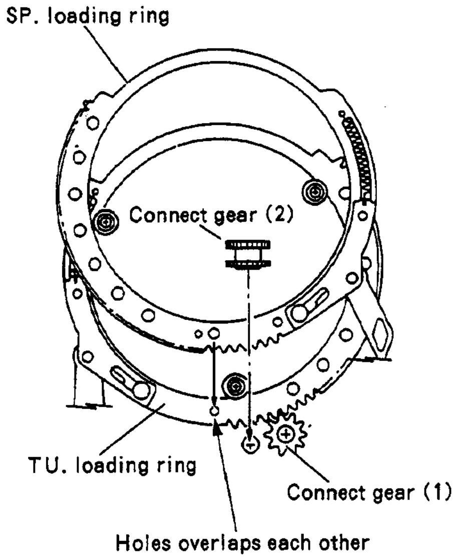
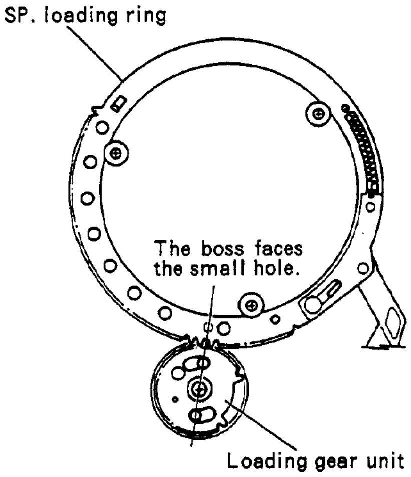
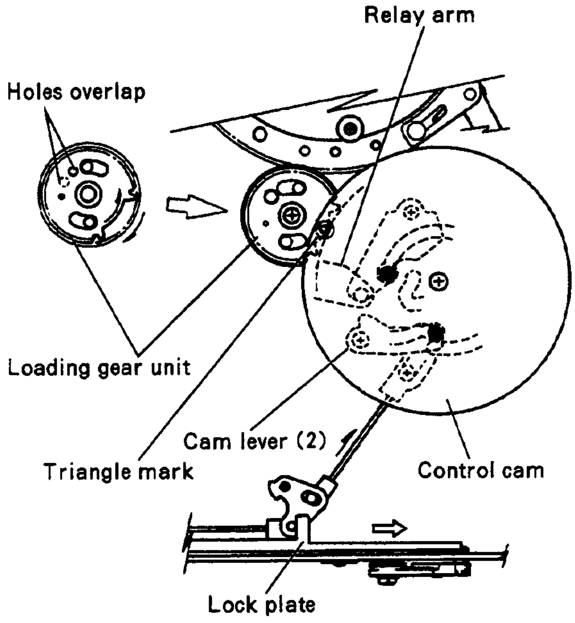
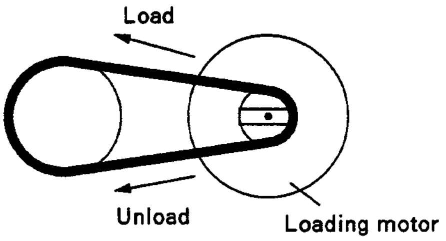
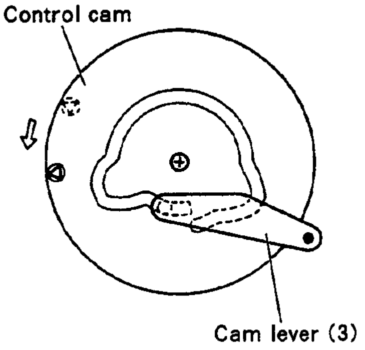
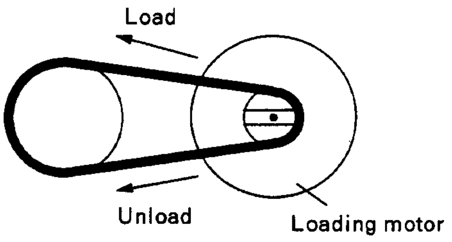



Fig. 2-3-15 Removal of the capstan motor</td><td><i>Note: Be careful not to damage the capstan shaft.</i>
(1) Remove the compoments in the following order.
The right side cover assy (see 1.6.2, page 1-3).
The video board, the S/S board, the SE board and the M JUNC board (see 1.7.3-1.7.6, page 1-7, 8).
(2) Disengage the reel belt from the capstan motor and disconnect the CN2 from the M.IF board.
(3) Remove three screws ⑪ and remove the capstan motor.</td></tr>
</table>

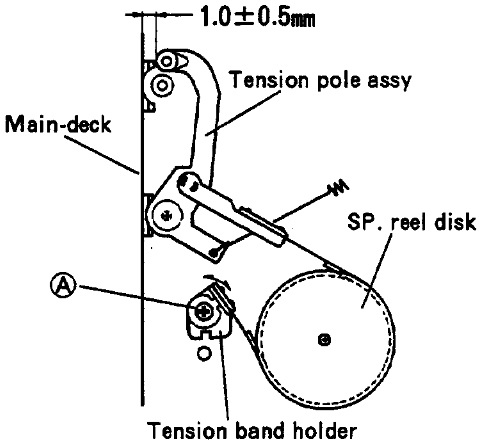
No.	Item	Adjustment and Check
12	**Brush assembly**  Fig. 2-3-16 Removal of the Brush assy	(1) Remove the compoments in the following order. The right side cover assy (see 1.6.2, page 1-3). The video board, the S/S board, the SE board and the M JUNC board (see 1.7.3-1.7.6, page 1-7, 8). (2) Remove a screw ⑫ and replace the brush. (3) **Apply PGJ04040 (BEACON-325) grease to the drum shaft.** (4) Install the brush assembly so that it comes off the center of the drum shaft as shown below.  Apply Beacon-325 grease to shaft. Brush Bottom view of the drum assy. Drum shaft Fig. 2-3-17 Reinstallation of the Brush assy
13	**SP. clutch** **SP. reel disk**  FF brake Separate the tension band from the tension pole assy. SP. reel disk Ⓑ Ⓒ SP. clutch Fig. 2-3-18 Removal of the SP. clutch and reel disk	(1) Separate the tension band from the tension pole assy. (2) Remove a slit washer Ⓑ while pull out the SP. reel disk upwards as disengaging the FF brake. ***Note:Pay attention to the washer installed underneath the SP. reel disk.*** (3) Remove a slit washer Ⓒ and pull out the SP. clutch upwards paying attention to the washer. (4) Install a new SP. clutch in the reverse order of the removal. (5) Clean the SP. reel shaft with alcohol, apply a drop of oil to SP. reel shaft. (6) Install a new SP. reel disk in the reverse order of the removal. (7) After replacement, check the back tension (see 2.5.1, page 2-14).
14	**TU. clutch** **TU. reel disk**  REW brake TU. reel disk TU. clutch Ⓒ Ⓑ Search brake Fig. 2-3-19 Removal of the TU. clutch and reel disk	(1) Check the take-up torque (see 2.5.2, page 2-14). (2) If necessary, replacement the clutch. (3) Remove a slit washer Ⓑ while pull out the TU. reel disk upwards as diengaging the REW brake and the SEARCH brake. ***Note:Pay attention to the washer installed underneath the TU. reel disk.*** (4) Remove a slit washer Ⓒ and pull out the TU. clutch upwards paying attention to the washer. (5) Install a new TU. clutch in the reverse order of the removal. (6) Clean the TU. reel shaft with alcohol, apply a drop of oil to TU. reel shaft. (7) Install a new TU. reel disk in the reverse order of the removal.

2.4 REASSEMBLING OF MECHANISM

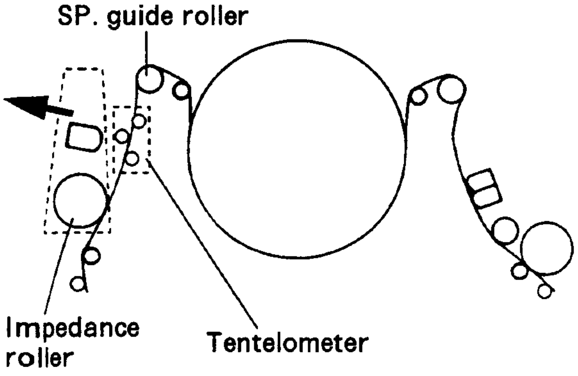
No.	Item	Adjustment and Check
	There is a close relation between the mode sensor and the syscon circuit in the mechanism of this model, and mechanical operations of levers, gears, rollers and others mechanism parts are controlled by the condition of connection between the mode sensor and the control cam. Therefore, if those mechanism parts are incorrectly set, the mechanism may fall into malfunction. When reassembling, make sure to do all parts in the assembly position.	
1	**Loading ring** **Connect gear**  SP. loading ring Connect gear (2) TU. loading ring Connect gear (1) Holes overlaps each other Fig. 2-4-1 Loading ring and connect gear	(1) Mount the TU. loading ring and connect gear (1) normally. (2) Set the SP. loading ring so that the large hole of the SP. loading ring coincide with hole of the TU. loading ring. (3) Keeping these correlative positions, set the connect gear (2) to gear with the loading rings.
2	**Loading gear unit**  SP. loading ring The boss faces the small hole. Loading gear unit Fig. 2-4-2 Installation of loading gear unit	(1) Install the loading gear unit so that the boss of the loading gear unit faces the small hole of the SP. loading ring. ***Note:No gear portion of the loading gear unit is toward right.***

No.	Item	Adjustment and Check
3	**Control cam**  Relay arm Holes overlap Loading gear unit Cam lever (2) Triangle mark Control cam Lock plate Fig. 2-4-3 Installation of control cam	(1) Turn the gears of the loading gear unit in the opposite directions so that the holes overlap each other, then insert a screwdriver etc. into the holes. (2) Shift the lock plate in the arrow direction to lock it. In this condition, the cassette housing lifts up. (3) Turn the cam lever (2) counter-clockwise fully. (4) Move the relay arm to the leftmost limit in the figure. (5) Then install the control cam so that the largest triangle mark of the control cam faces toward the center of the loading gear unit. (6) Turn the loading motor by hand, confirm that the control cam is able to rotate. (7) Take out the screwdriver etc. from the loading gear unit.  Load Unload Loading motor Fig. 2-4-4 Rotational direction of Loading motor
4	**Cam lever (3)**  Control cam Cam lever (3) Fig. 2-4-5 Installatin of cam lever (3)  Load Unload Loading motor Fig. 2-4-6 Rotational direction of Loading motor	(1) Turn the loading motor to loading direction by hand to rotate the control cam counter-clockwise, then set the cam lever (3) correctly as shown in the figure.

2.5 TAPE TENSION ADJUSTMENT

<table>
<tr><th>No.</th><th>Item</th><th>Adjustment and Check</th></tr>
<tr><td>1</td><td>Tension pole position adjustment


1.0±0.5mm
Tension pole assy
Main-deck
SP. reel disk
Ⓐ
Tension band holder

Fig. 2-5-1 Back tension adjustment</td><td>(1) Required instrument for this adjustment:
•Cassette torque meter (PUJ42881)
(2) Turn the power off and cassette tape is ejected, apply black tape or the like to the LED in the center of the deck to shut off infrared rays.
(3) Turn on the power and set the mechanism to the Play mode without any cassette tape loaded. Again turn the power off and get the cassette housing to enter the eject state by hand. At that time, no cassette tape is loaded.
(4) Loosen the screw Ⓐ a little and adjust the tension band holder in the position so that there is gap (1 mm) between the cutout of the main deck and the tension pole assy.
(5) Tighten the screw Ⓐ to fix the tension band holder.
(6) Remove the tape applied in the above step (2) and turn on the power.</td></tr>
<tr><td></td><td>— Check the back tension —
<table><tr><td>Back tention</td><td>42±4g-cm</td></tr></table></td><td>(7) Mount a cassette torque meter and set the mechanism to the REC mode.
(8) Confirm that the torque meter reads 38~46g-cm as the supply torque.
(9) If the torque meter reads otherwise, clean the supply reel disk in the part that contacts the tension band and check the spring of the tension pole assy.
(10) If the measurement result is still out of the standard, fine adjust the position of the tension band holder just in a range of ±0.5 mm between the tension pole assy and the cutout portion of the main deck. Again check the back tension.
(11) After completing the above adjustment, apply screw sealant to the tension band holder.</td></tr>
<tr><td></td><td>— When use the Tentelometer —

<table><tr><td>Back tention</td><td>24±3g</td></tr></table>
Fig. 2-5-2 Back tension check with Tentelometer</td><td>(1) Required instruments for this adjustment:
•Tentelometer (PGJ04020)
(2) Repeat the above steps (2) through (6).
(3) Use a tape begin portion of T-120 cassette tape and set to the REC mode.
(4) Measure the tension between the impedance roller and the supply guide roller, and make sure of it in the range between 21 and 27g.
(5) If out of the standard, repeat the above steps (9) through (11).</td></tr>
<tr><td>2</td><td>Take-up torgue check
<table><tr><td>TU torque</td><td>60 to 100g-cm</td></tr></table></td><td>(1) Required instruments for this adjustment:
•Cassette torque meter (PUJ42881)
(2) Mount a cassette torque meter and set the mechanism to the REC mode.
(3) Confirm that the torque meter reads 60 to 100 g-cm as the take-up torque.</td></tr>
</table>

2.6 INTERCHANGEABILITY ADJUSTMENT

No.	Item	Adjustment and Check

Interchangeability must be adjusted after replacement of the upper drum assembly, drum assembly and A/C head assembly, etc.

1 **Names of main parts**

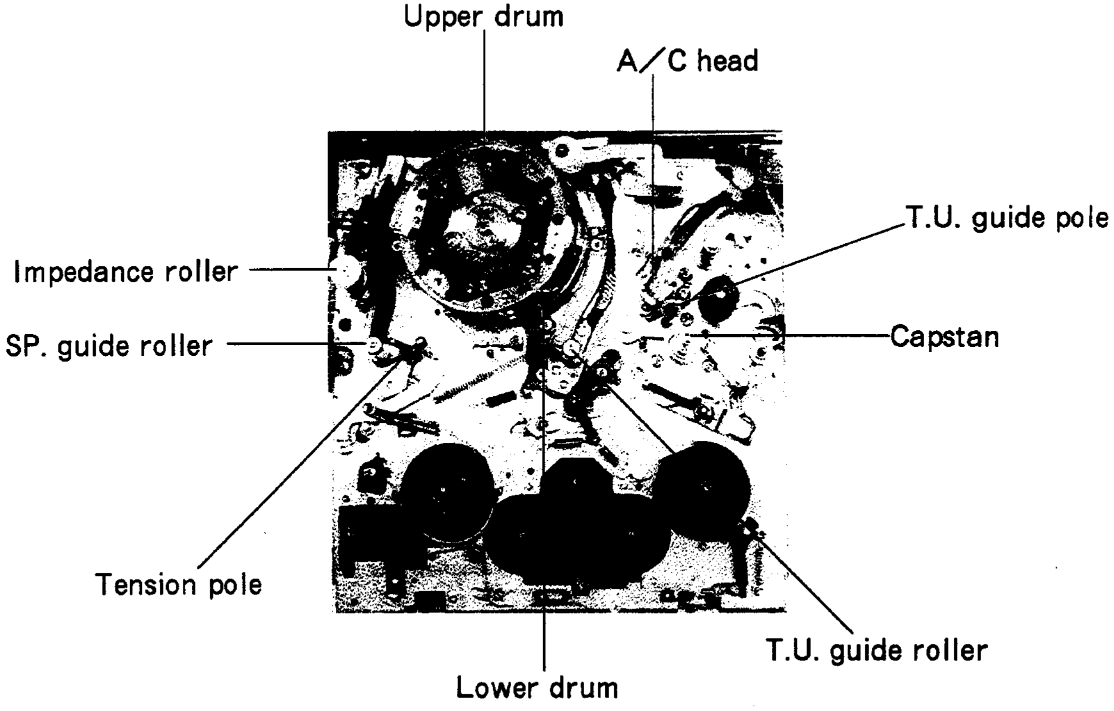

Upper drum
A/C head
T.U. guide pole
Impedance roller
SP. guide roller
Capstan
Tension pole
T.U. guide roller
Lower drum

Fig. 2-6-1 Names of main parts

2 **FM waveform check**

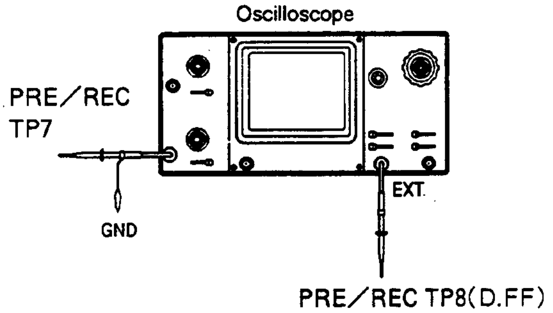
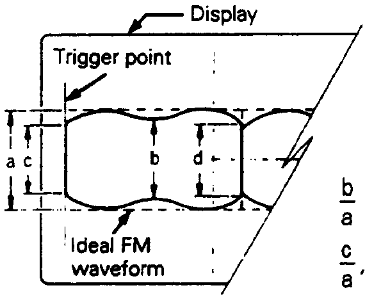

Oscilloscope
PRE/REC
TP7
GND
EXT
PRE/REC TP8(D.FF)

Fig. 2-6-2 Connection of Oscilloscope


Display
Trigger point
a
c
b
d
Ideal FM waveform

$\frac{b}{a} \geqq 0.9$

$\frac{c}{a}, \frac{d}{a} \geqq 0.8$

Fig. 2-6-3 FM waveform check

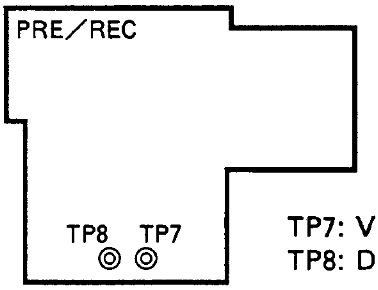
Note: Before loading any alignment tape, make sure to confirm nothing wrong in tape transport with an ordinary tape.

(1) For observing FM waveform, connect an oscilloscope with TP7 on PRE/REC board while connecting the other probe with TP8 on PRE/REC board for triggering it externally with ⊖ slope.

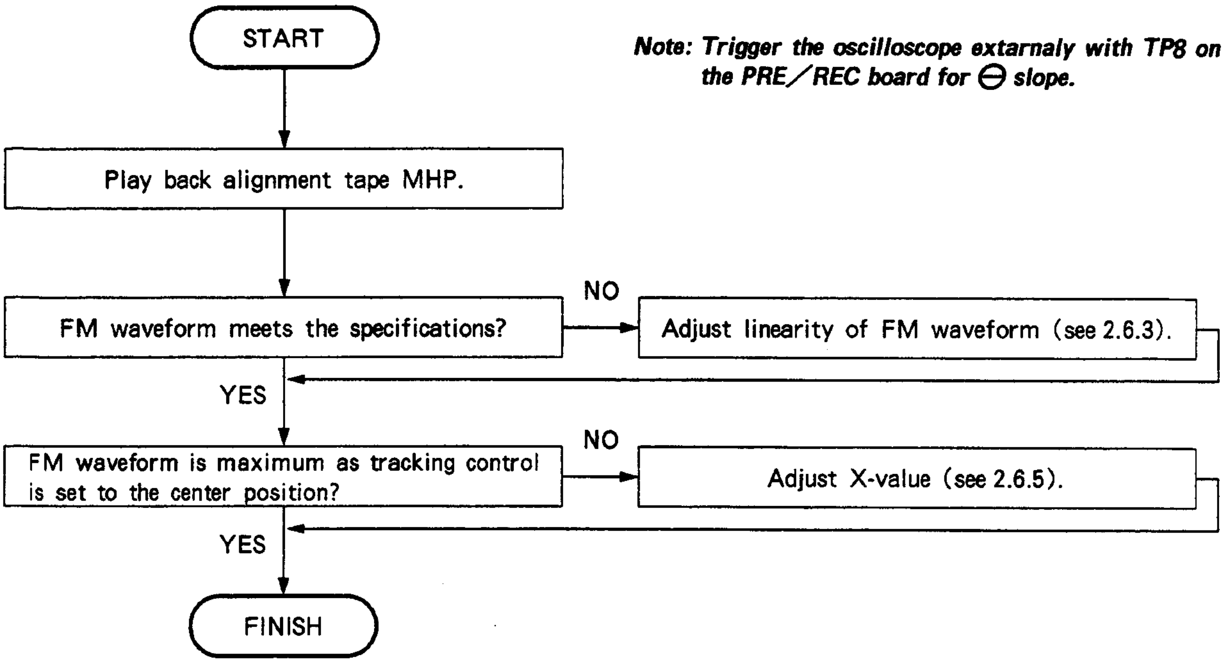
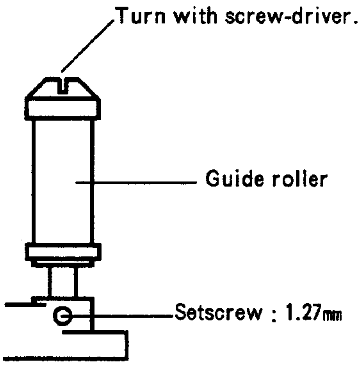
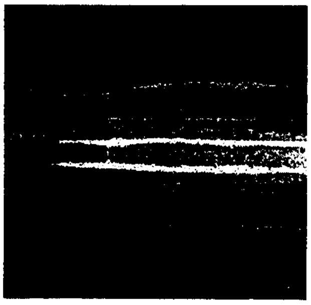
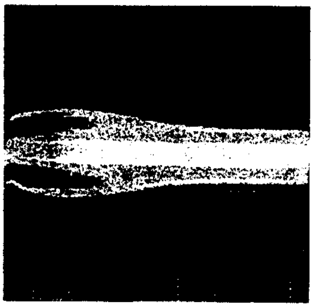
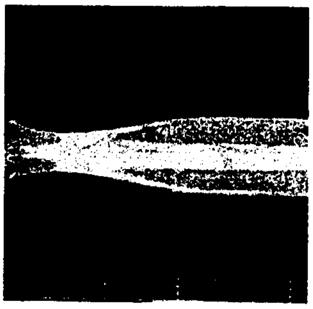
(2) Play back the alignment tape MHP(NTSC)/MHPE(PAL) while turning the tracking control to maximize FM waveform. Referring to Fig. 2-6-3, check whether rate of each level to the maximum level "a" is as specified or not.

(3) When the maximum level "a" is set for 4 scale divisions on the oscilloscope screen, "b" must be more than 3.6 scale divisions while "c" and "d" must be more than 3.2 scale divisions.
Note: To set the maximum level "a" for 4 scale divisions, adjust the gain control of the oscilloscope in addition to the tracking control that is set to maximum position.

– Location of TPs –

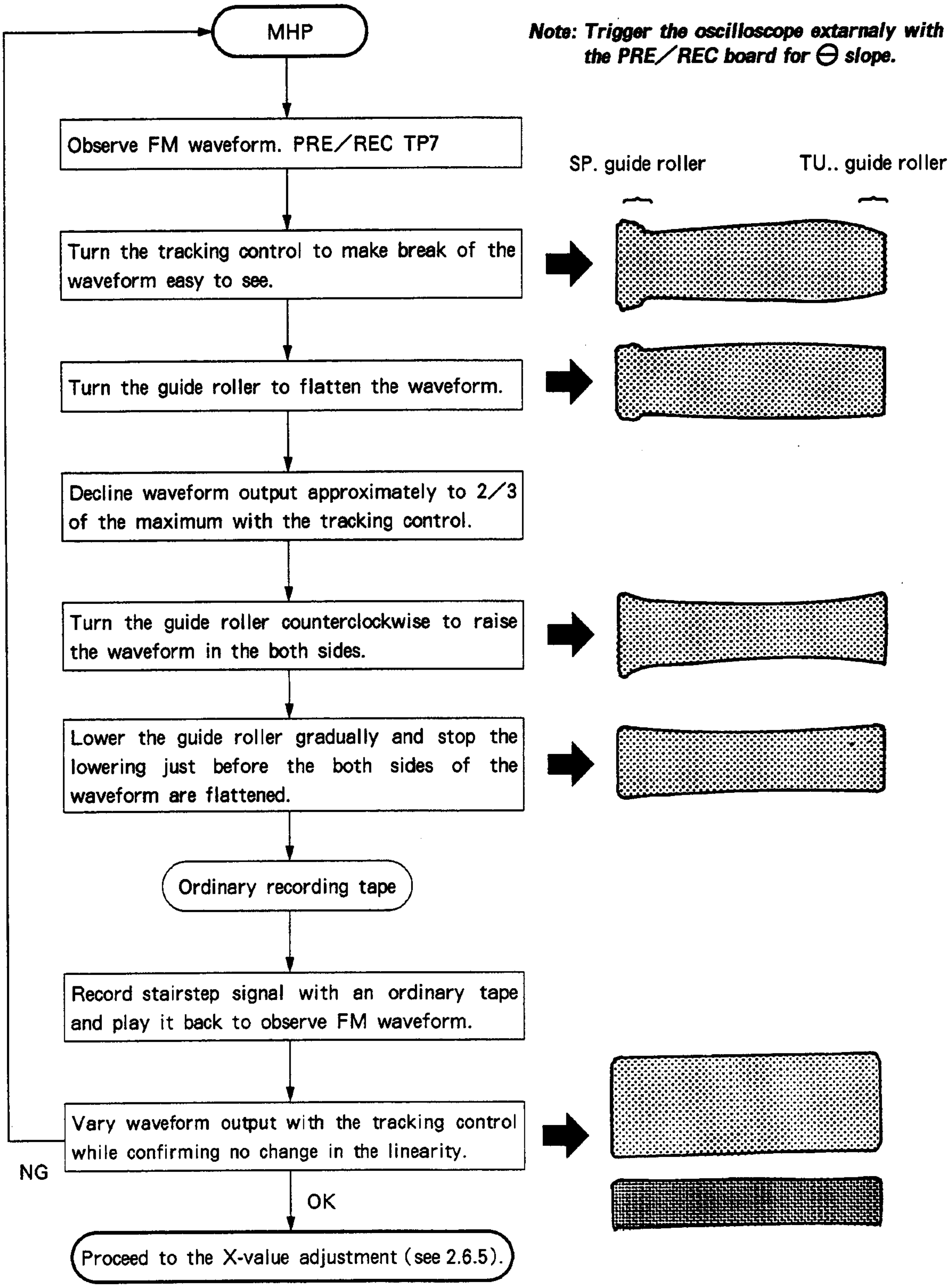

PRE/REC
TP8
TP7

TP7: V-FM
TP8: D-FF

No.	Item	Adjustment and Check
	 START Play back alignment tape MHP. FM waveform meets the specifications? NO Adjust linearity of FM waveform (see 2.6.3). YES FM waveform is maximum as tracking control is set to the center position? NO Adjust X-value (see 2.6.5). YES FINISH	***Note: Trigger the oscilloscope externaly with TP8 on the PRE/REC board for ⊖ slope.***
3	**Interchangeability adjustment** **— Linearity adjustment —**  Turn with screw-driver. Guide roller Setscrew : 1.27㎜ Fig. 2-6-4 Names of Pole base  Tracking center	(1) **Precautions for adjustment:** • For interchangeability adjustment, play back the alignment tape MHP. • If FM dropout cannot be corrected by adjusting the guide roller, it needs to replace the drum assembly. This replacement should apply only to the case that waveforms of CH-1 and CH-2 have the same tendency. • The following pictures show FM waveforms when the lower drum is worn. • Required tool: Hex. key (1.27 ㎜)  Tracking (−)  Tracking (+)

No.	Item	Adjustment and Check

Note: Trigger the oscilloscope externaly with TP8 on the PRE/REC board for ⊖ slope.



MHP

Observe FM waveform. PRE/REC TP7

Turn the tracking control to make break of the waveform easy to see.

Turn the guide roller to flatten the waveform.

Decline waveform output approximately to 2/3 of the maximum with the tracking control.

Turn the guide roller counterclockwise to raise the waveform in the both sides.

Lower the guide roller gradually and stop the lowering just before the both sides of the waveform are flattened.

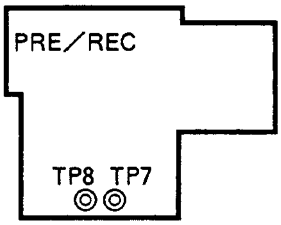
Ordinary recording tape

Record stairstep signal with an ordinary tape and play it back to observe FM waveform.

Vary waveform output with the tracking control while confirming no change in the linearity.

Proceed to the X-value adjustment (see 2.6.5).

– Location of TPs –



No.	Item	Adjustment and Check
4	**A/C head adjustment**	

If the A/C head is improperly positioned, it results in dropdown of output level or poor S/N ratio in playback audio signal, moreover, misaligned servo without picking-up of control signal at the worst.

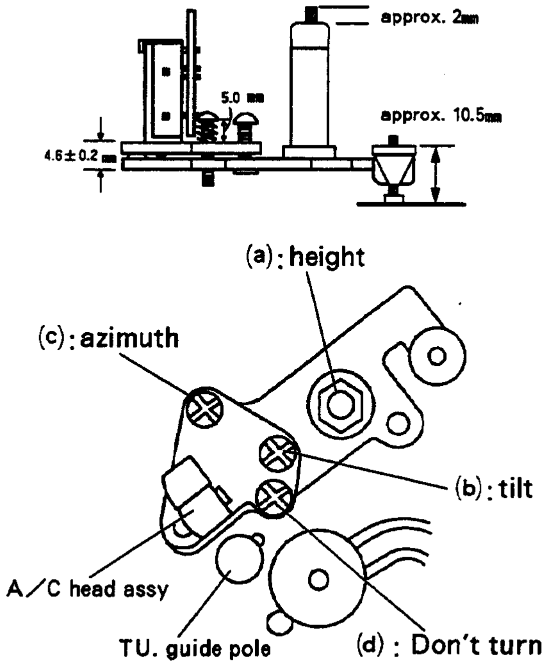

approx. 2mm
5.0 mm
approx. 10.5mm
4.6±0.2mm
(a): height
(c): azimuth
(b): tilt
A/C head assy
TU. guide pole
(d) : Don't turn

Fig. 2-6-5

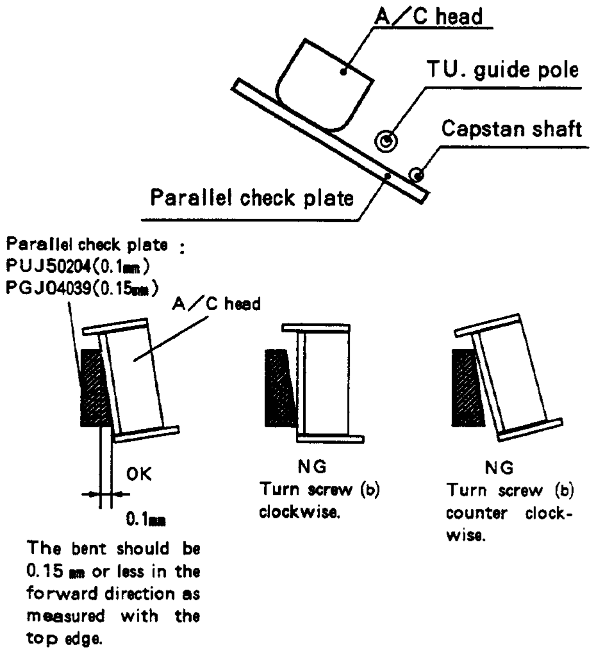

A/C head
TU. guide pole
Capstan shaft
Parallel check plate
Parallel check plate :
PUJ50204(0.1mm)
PGJ04039(0.15mm)
A/C head
OK
0.1mm
The bent should be 0.15 mm or less in the forward direction as measured with the top edge.
NG
Turn screw (b) clockwise.
NG
Turn screw (b) counter clockwise.

Fig. 2-6-6 Parallel check of A/C head

(1) **Required implements:**
- Alignment tape : MHP(NTSC)/MHPE(PAL)
- Parallel check plate : PUJ50204(0.1), PGJ04039(0.15)

(2) **Rough check of A/C head height before adjustment**

① In the stage of tape transport check before height adjustment, temporarily adjust the height of the A/C head in order to prevent alignment tape from damage as well as to perform adjustment with ease.

(3) **Tilt (forward bent) adjustment**

① Adjust the screw (b) with the parallel check plate (PUJ50204) so that tilt of the A/C head is 0.1mm. (See Fig. 2-6-7.) If there is a gap above the A/C head (this is interpreted as a little tilt), tighten the screw (b) to increase the tilt of the A/C head.
On the other hand, if there is a gap underneath the A/C head, loosen the screw (b) to decrease the tilt.

② Confirm that tape is neither damaged nor wrinkled around the lower flange of the take-up guide pole. If tape is wrinkled, fine adjust the height of the take-up guide pole (see 2.7.3, page 2-20).

(4) **Height and azimuth adjustments**

① Connect the oscilloscope to AUDIO OUT (or AUCP board TP9) and set the Hi-Fi REC switch to "OFF".

② Set the AUDIO OUT switch positioned side panel to "NORM" position.

③ Play back the alignment tape MHP(NTSC)/MHPE(PAL) while adjusting the A/C head height with the hex. nut (a) to maximum output level. (**Height adjustment**)

④ Play back the alignment tape MHP(NTSC)/MHPE(PAL) while adjusting the screw (c) so that the output waveform become maximum. (**Azimuth adjustment**)

⑤ Repeat the above steps No.③ and No.④ alternately for more precise adjustment.

(5) **A/C head parallel check**

① Confirm that tilt of the A/C head is less than 0.15mm with the parallel check plate (PGJ04039).

② If it is out of the specifications, repeat the above steps (3) and (4).

(6) After completing the above adjustment, apply screw sealant to the screws (b), (c), (d) and a nut (a).

No.	Item	Adjustment and Check
5	**X-value adjustment**	

If X-value is adjusted improperly, it results in time lag between picture and normal sound in playback of a tape that is recorded with a set whose X-value is correctly adjusted.

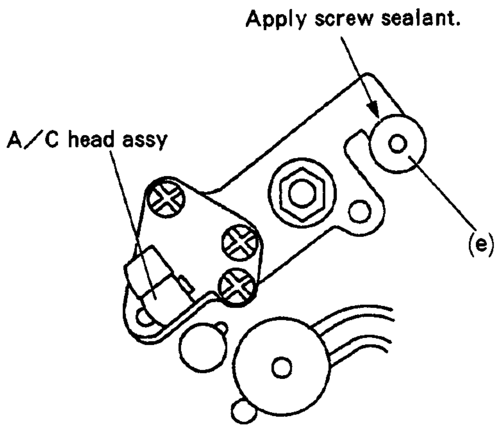


Fig. 2-6-8

Maximize FM output and phase difference in audio and FM no-recorded portions is **less than ±1 field.**

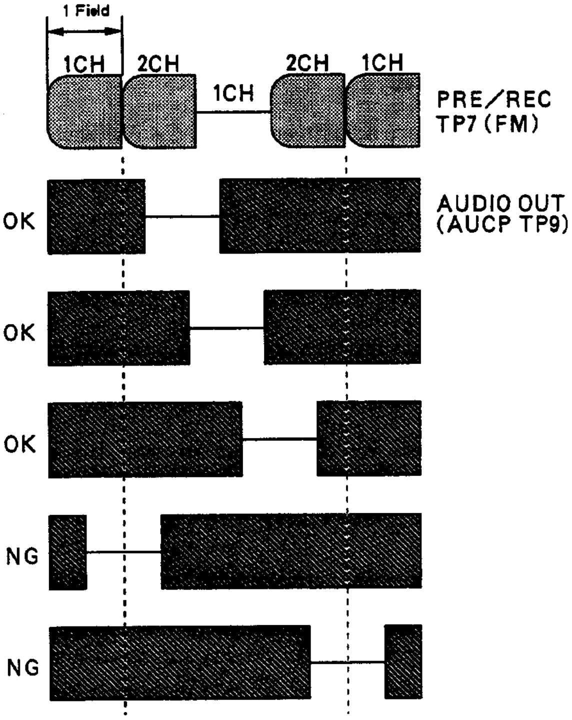


Fig. 2-6-9 X-value adjustment

• Manner of external synchronization:

① Set the oscilloscope's time sweep to 10 msec.

② In the condition that the oscilloscope is synchronized with D. FF signal, turn the oscilloscope's HOLD OFF control in the direction of (+) to stabilize non-recorded portion.

(1) **Required implements:**
- Taper nut driver : PUJ50637
- Alignment tapes : MBP-X(NTSC)/MBPE-X(PAL), MH-F6(NTSC)/MH-F8(PAL)

(2) Confirm the tracking preset adjustment.

(3) **Preparation**

① Connect CH-1 of the oscilloscope with TP7 on PRE/REC board while connecting CH-2 with AUDIO OUT (or AUCP board TP9) and set the Hi-Fi REC switch to "OFF".

② Trigger the oscilloscope externally with signal from TP8 on PRE/REC board (D. FF).

③ Set the tracking to center position.

(4) Play back the alignment tape MBP-X(NTSC)/MBPE-X (PAL).

(5) Adjust the taper nut (e) with the taper nut driver to maximize FM output and to accord phases of audio and FM signals with each other in their no-recorded portions.

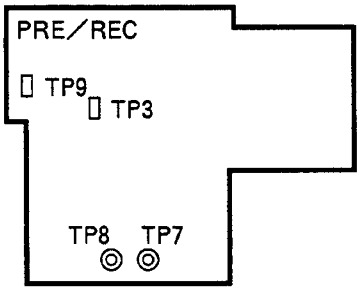
(6) Connect CH-1 of the oscilloscope with TP3 on PRE/REC board.

(7) Trigger the oscilloscope externally with signal from TP9 on PRE/REC board (A. FF).

(8) Play back the 1kHz segment of the alignment tape MH-F6(NTSC)/MH-F8(PAL) and adjust the taper nut (e) so that the FM waveform is maximum at a point the nearest position of the above step (4) with the tracking control set at the center.

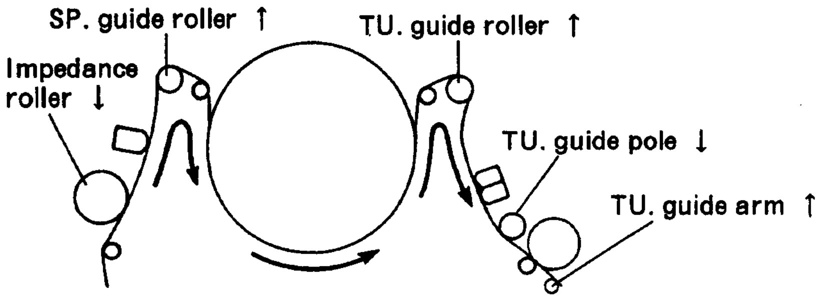
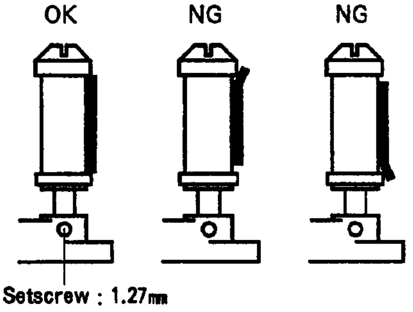
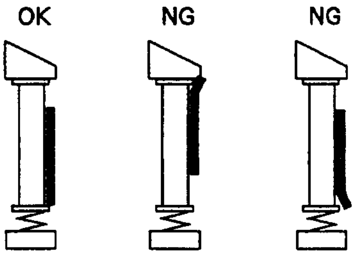
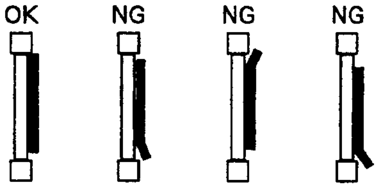
(9) After completing the above adjustment, apply screw sealant to the nut (e).

– Location of TPs –



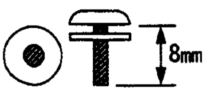
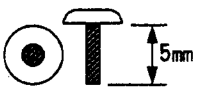
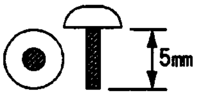
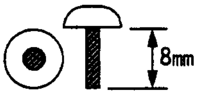
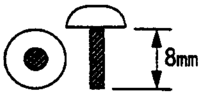
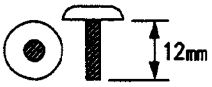
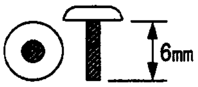
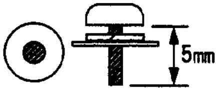
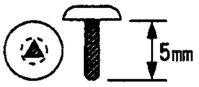
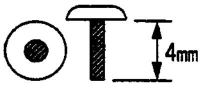
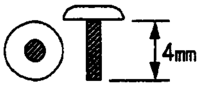
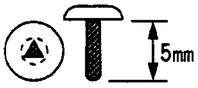
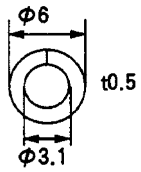
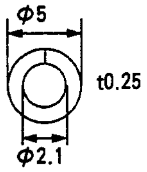
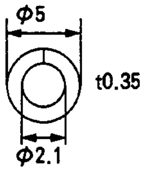
2.7 ADJUSTMENT OF TAPE TRANSPORT SYSTEM

Note: The tape transport system has been precisely adjusted at the factory before shipment. Check and adjustment are required only after the parts of the tape transport system are replaced.

No.	Item	Adjustment and Check
1	**Location of tape guide**  SP. guide roller ↑ TU. guide roller ↑ Impedance roller ↓ TU. guide pole ↓ TU. guide arm ↑ Fig. 2-7-1 Names of Tape guides ↑ Upper edge alignment ↓ Lower edge alignment	
2	**SP. guide rolloer** **TU. guide rolloer**  Fig. 2-7-2 Height adjustment of SP. & TU. guide roller	(1) **Required tool :** •Hexagon head key (1.27 ㎜) (2) Slightly loosen the setscrew under the guide roller. (3) Play an ordinary thin tape (more than T-160 tape). (4) Adjust the height of the guide roller temporarily so that the tape smoothly runs. (**Upper edge alignment**) (5) Tighten the setscrew. (6) After the temporary adjustment, check the FM waveform.
3	**TU. guide pole**  Fig. 2-7-3 Height adjustment of TU. guide pole	(1) Play an ordinary thin tape (more than T-160 tape). (2) Adjust the height of the take-up guide pole so that the tape smoothly runs on the lower flange of the take-up guide pole. (**Lower edge alignment**) (3) Check that the tape is not damaged at near the take-up guide pole and the guide arm in the following modes several times respectively. PLAY→S.REV→S.FWD→STILL→PLAY (4) When there is any result unsatisfactory in the above step (3), turn the take-up guide pole within a quarter round to lower the height and repeat the check mentioned in the above step (3). (5) This adjustment result must be checked again after the A/C head adjustment (see 2.6.4) is completed. (6) After the adjustment, apply screw sealant to the screw.
4	**TU. guide arm**  Fig. 2-7-4 Height adjustment of TU. guide arm	(1) **Required tool :** •Hexagon head key (0.9 ㎜) (2) Set to S.REV mode an ordinary thin tape (more than T-160 tape). (3) Adjust the height of the TU. guide arm with set screw so that the tape is not damaged at upper frange of the TU. guide arm. (**Upper edge alignment**) (4) After the adjustment, apply screw sealant to the set screw.

2.8 TABLE OF SCREWS AND SLIT WASHERS USED IN THIS SET

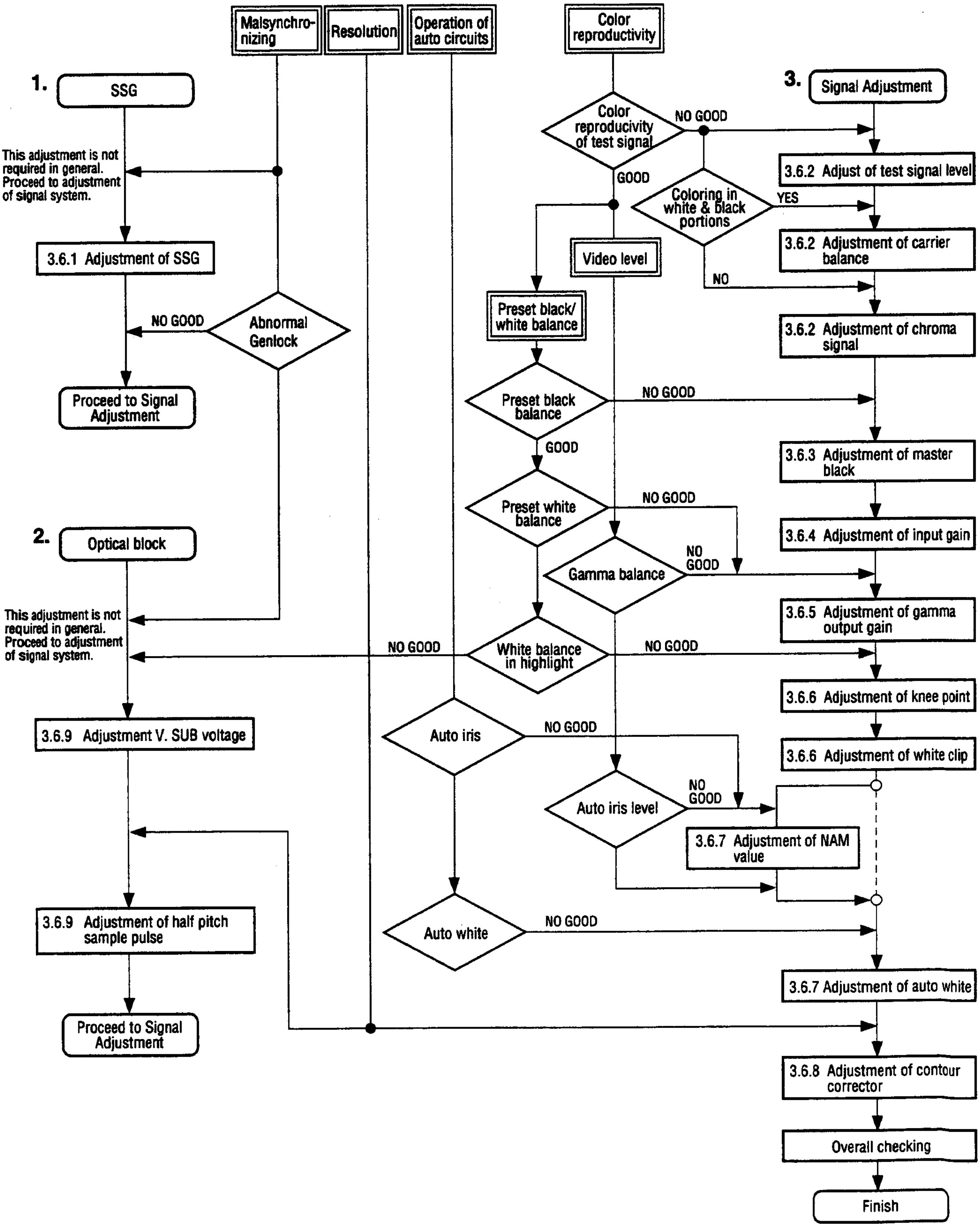
***Note:** The numbers of screws and slit washers shown below respectively accord with numbers of them appearing in this section.*

① (gold)  PDM4165A (M3)	② (gold)  SDSP2605Z	③ (silver)  SPSP2005Z	④ (black)  PQ43687B (M2.6)	⑤ (gold)  PQ44621 (M2.6)
⑥ (gold)  SDSP2612Z	⑦ (gold)  SDSP2606Z	⑧ (gold)  DPSP2005Z	⑨ (gold)  SDST2605Z	⑩ (black)  SDSP2004M
⑪ (gold)  SDSP2604Z	⑫ (gold)  SDST2005Z			
Ⓐ  PQM30017-24 (red)	Ⓑ  PQM30017-26 (red)	Ⓒ  PQM30017-2 (black)		

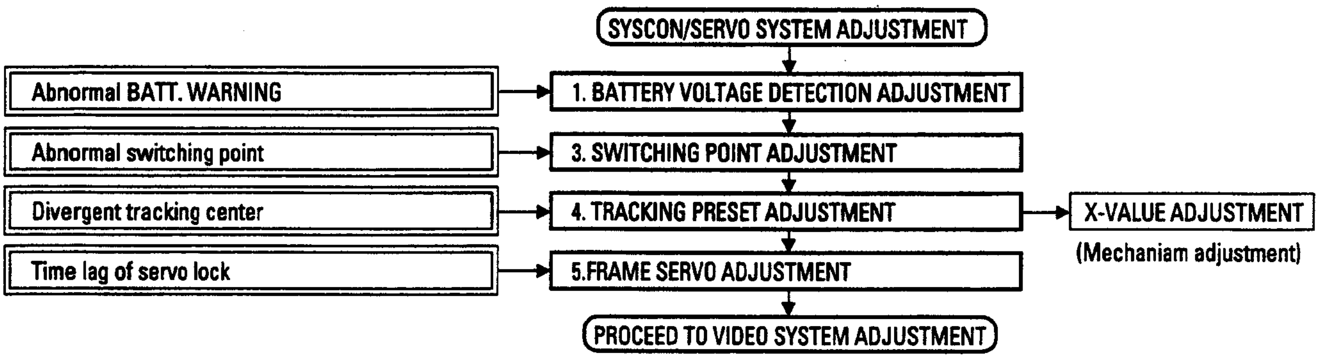
SECTION 3
ELECTRICAL ADJUSTMENT

3.1 ELECTRICAL ADJUSTMENT FLOWCHART

3.1.1 Electrical adjustment flowchart for camera section


Malsynchro-nizing
Resolution
Operation of auto circuits
Color reproductivity
1.
SSG
This adjustment is not required in general. Proceed to adjustment of signal system.
3.6.1 Adjustment of SSG
NO GOOD
Abnormal Genlock
Proceed to Signal Adjustment
2.
Optical block
This adjustment is not required in general. Proceed to adjustment of signal system.
NO GOOD
3.6.9 Adjustment V. SUB voltage
3.6.9 Adjustment of half pitch sample pulse
Proceed to Signal Adjustment
Color reproducivity of test signal
NO GOOD
GOOD
Coloring in white & black portions
YES
NO
Video level
Preset black/ white balance
Preset black balance
NO GOOD
GOOD
Preset white balance
NO GOOD
Gamma balance
NO GOOD
White balance in highlight
NO GOOD
NO GOOD
Auto iris
NO GOOD
Auto iris level
NO GOOD
Auto white
NO GOOD
3.
Signal Adjustment
3.6.2 Adjust of test signal level
3.6.2 Adjustment of carrier balance
3.6.2 Adjustment of chroma signal
3.6.3 Adjustment of master black
3.6.4 Adjustment of input gain
3.6.5 Adjustment of gamma output gain
3.6.6 Adjustment of knee point
3.6.6 Adjustment of white clip
3.6.7 Adjustment of NAM value
3.6.7 Adjustment of auto white
3.6.8 Adjustment of contour corrector
Overall checking
Finish

3.1.2 Electrical adjustment flowchart for VTR section


SYSCON/SERVO SYSTEM ADJUSTMENT
Abnormal BATT. WARNING
1. BATTERY VOLTAGE DETECTION ADJUSTMENT
Abnormal switching point
3. SWITCHING POINT ADJUSTMENT
Divergent tracking center
4. TRACKING PRESET ADJUSTMENT
X-VALUE ADJUSTMENT
(Mechaniam adjustment)
Time lag of servo lock
5.FRAME SERVO ADJUSTMENT
PROCEED TO VIDEO SYSTEM ADJUSTMENT

- The following flowchart shows adjustment items that have some factors to affect the signal systems.
  Y: Abnormal luminance
  C: Abnormal color
  F: Abnormal frequency response

VHS		S-VHS		ADJUSTMENT OF VIDEO SYSTEM
REC	PB	REC	PB	
Y		Y		1. AGC ADJUSTMENT
		Y	Y	2. REC/PROCESS INPUT LEVEL ADJUSTMENT
		Y	Y	3. REC/PROCESS OUTPUT LEVEL ADJUSTMENT
Y		Y		4. CARRIER/DEVIATION ADJUSTMENT
Y		Y		5. WHITE AND DARK CLIP ADJUSTMENT
	Y C F		Y C F	6. S DETECTION ADJUSTMENT
Y C F		Y C F		7. REC FM LEVEL ADJUSTMENT
C	C	C	C	8. VCXO ADJUSTMENT
C	C	C	C	9. VCO ADJUSTMENT
C	C	C	C	10. PILOT BURST PHASE ADJUSTMENT (PAL)
C	C	C	C	11. PILOT BURST LEVEL ADJUSTMENT (PAL)
		C		12. S-VHS REC COLOR LEVEL ADJUSTMENT
C				13. VHS REC COLOR LEVEL ADJUSTMENT
	Y C		Y C	14. NON-CORRELATING PULSE ADJUSTMENT
			Y	15. S-VHS PB Y LEVEL ADJUSTMENT
	C		C	16. PB BURST LEVEL ADJUSTMENT
			F	17. S-VHS PB FREQUENCY RESPONSE ADJUSTMENT
	Y			18. VHS PB Y LEVEL ADJUSTMENT
	F			19. VHS PB FREQUENCY RESPONSE ADJUSTMENT
				END

3.2 PRECAUTIONS ON ELECTRICAL ADJUSTMENT

1. The electrical adjustment procedures described in this chapter apply to the cases that replacement of video heads or expendable parts of the mechanism needs electrical adjustment, there is something abnormal in output video signal, and there is a failure in the electrical circuit.
   Before proceeding to adjust an item appearing in this chapter, make sure to check that the objective item is out of the specifications.
2. For any item or part that needs mechanism adjustment before electrical adjustment, check to see whether it has undergone required mechanism adjustment or not before electrical adjustment.
3. Check and adjustment require this set to be equipped with all the boards.
4. Don't cut off the power supply to this set by turning off the power switch or other means whenever the tape is travelling, otherwise the tape may be damaged.
5. When a warning message appears, immediately turn off the power switch, and then investigate the cause and remove it. Before trying to turn on the set again, confirm that the cause of the warning message has completely been removed.

3.3 TOOLS AND TEST INSTRUMENTS REQUIRED FOR ADJUSTMENT

3.3.1 Test instruments required for adjustment

1. Lighting apparatus (3200 K halogen lamp)
2. DC voltmeter (Digital voltmeter is recommended.)
3. Oscilloscope (Dual-trace type, capable of 50 MHz or more)
4. Frequency counter
5. Color TV monitor
6. Waveform monitor (WFM)
7. Vectorscope
8. Power supply (12 V DC from AC power adapter, AA-P250)
9. Video signal generator [TG-7/1(Shibasoku), Model 1410(Tektronix), PGJ05003 or equivalent : NTSC]
   [TG-7/2 (Shibasoku), Model 1411(Tektronix) : PAL]
10. Sweep signal generator (100 kHz to 10 MHz)
11. Audio tester

3.3.2 Special implements required for adjustment

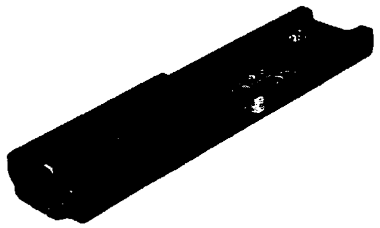
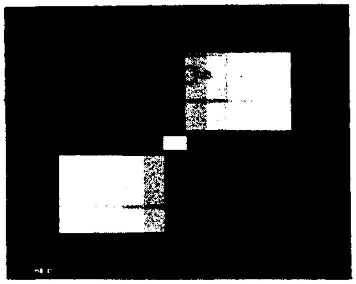
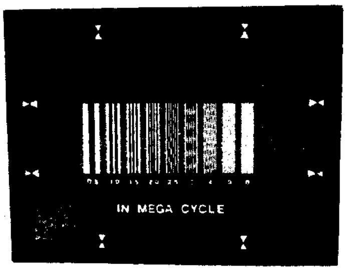
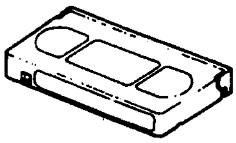
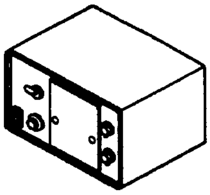
1 Tripod base	2 Gray scale chart	3 In-megacycle chart
<KA-510 or equivalent> 	<Part No. GS2L> 	<Part No. RESC-010> 
4 Alignment tapes	5 Carrier checker	
(Refer to 3.3.4.) 	<Part No. PGJ05008(NTSC)> <Part No. PGJ05008-2(PAL)> 	

Fig. 3-3-1 Special implements

3.3.3 Convenient tool for servicing

Shorting wire

Such a shorting wire facilitates connection between test points.

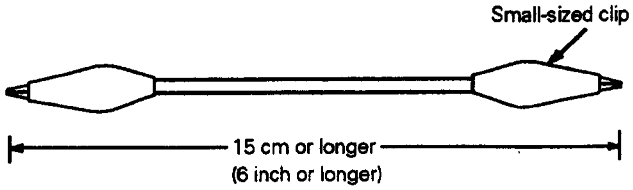


Fig. 3-3-2 Shorting wire

3.3.4 Specifications of alignment tapes

- **MHP (for NTSC)/MHPE (for PAL)**

Video signal	Nor. Audio signal	Application	Remark
VHS SP mode Stairstep	7 kHz (NTSC) 6 kHz (PAL)	• For check and adjustment of interchangeability • For adjustment of PB switching point	MH-1(NTSC)/MH-2(PAL) stairstep signal is substitiutable.

- **MHV-2 (for NTSC)/MHVE-2 (for PAL)**

Video signal	Nor. Audio signal	Application	Remark
VHS SP mode Color bar	—	• For check and adjustment of video PB circuit	MH-1(NTSC)/MH-2(PAL) color bar signal is substitutable.

- **MBA [MHA] (for NTSC)/MBAE [MHAE] (for PAL)**

Video signal	Audio signal	Application	Remark
CTL signal only	1 kHz (0 dB)	• For check and adjustment of audio PB circuit	MH-1(NTSC)/MH-2(PAL) 1 kHz signal is substitiutable.

- **MH-6 (for NTSC)/MH-8 (for PAL)**

No.	PB time	Video signal	Nor. Audio signal		Application
			U version	E version	
1	2 minutes	Color sweep	400 Hz (–20dB)	400 Hz (–10dB)	• Check and adjustment of video signal's frequency response in PB circuit • Check and adjustment of normal audio signal's frequency response in PB circuit
2	2 minutes	Color sweep	100 Hz (–20dB)	100 Hz (–10dB)	
3	2 minutes	Color sweep	10 kHz (–20dB)	8 kHz (–10dB)	
4	4 minutes	Color sweep	—	—	

- **MH-F6 (for NTSC)/MH-F8 (for PAL)**

No.	PB time	Video signal	Hi-Fi Audio signal	Application
1	5 minutes	—	Carrier only	• Check and adjustment of interchangeability of mechanism
2	5 minutes	Stairstep	Carrier only	• Check and adjustment of interchangeability of mechanism
3	5 minutes	—	1 kHz (± 50 kHz dev.)	• Check and adjustment of FM audio PB circuit

- **MHV-2H (for NTSC)/MHVE-2H (for PAL)**

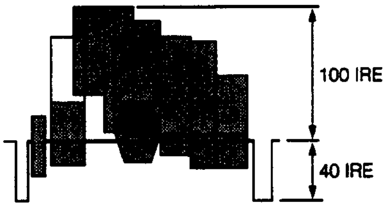
Video signal	Audio signal	Application	Remark
S-VHS SP mode Color bar	—	• For check and adjustment of video PB circuit	MH-1H (NTSC)/MH-2H(PAL) SP mode color bar signal is substitutable.

3.3.5 Signal required for video system adjustment

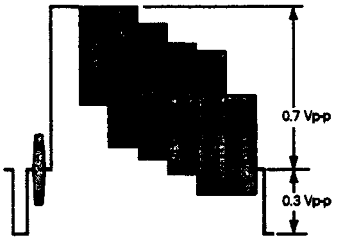
Note:

Adjustments that need color bars signal can be performed with the internally provided color bars signal (test signal). For adjustments that need sweep signal and pulse and bar (2T) signal, it is required to input those signals externally according to the procedure mentioned in the section 3.4.2.

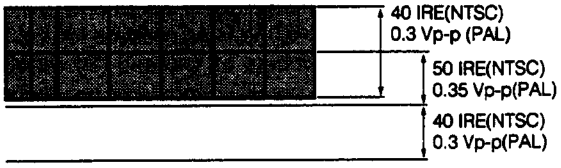
1N. EIA color bar signal (75 %, setup: 7.5 IRE)


100 IRE
40 IRE

1P. EBU color bar signal (75%)

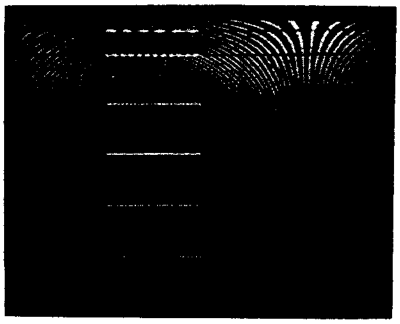

0.7 Vp-p
0.3 Vp-p

2. Video sweep signal (100 kHz to 6 MHz)

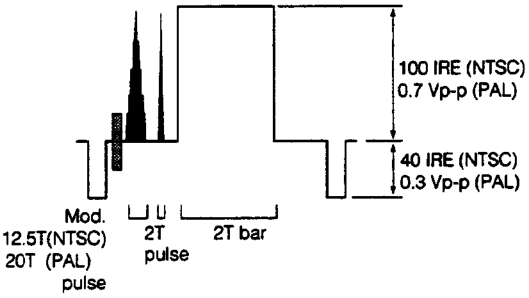

40 IRE(NTSC)
0.3 Vp-p (PAL)
50 IRE(NTSC)
0.35 Vp-p(PAL)
40 IRE(NTSC)
0.3 Vp-p(PAL)

To be used for frequency response adjustment.

When sweep signal is supplied through the external signal input, use a sweep signal which is well-balanced in H correlation in order to prevent malfunction. When horizontally correlating sweep signal is used, a TV monitor displays black and white aligning as shown in the following picture.



3. Pulse and bar (2T) signals


100 IRE (NTSC)
0.7 Vp-p (PAL)
40 IRE (NTSC)
0.3 Vp-p (PAL)
Mod.
12.5T(NTSC)
20T (PAL)
pulse
2T
pulse
2T bar

3.4 SETUP FOR ELECTRICAL ADJUSTMENT

3.4.1 Standard setup for adjustment

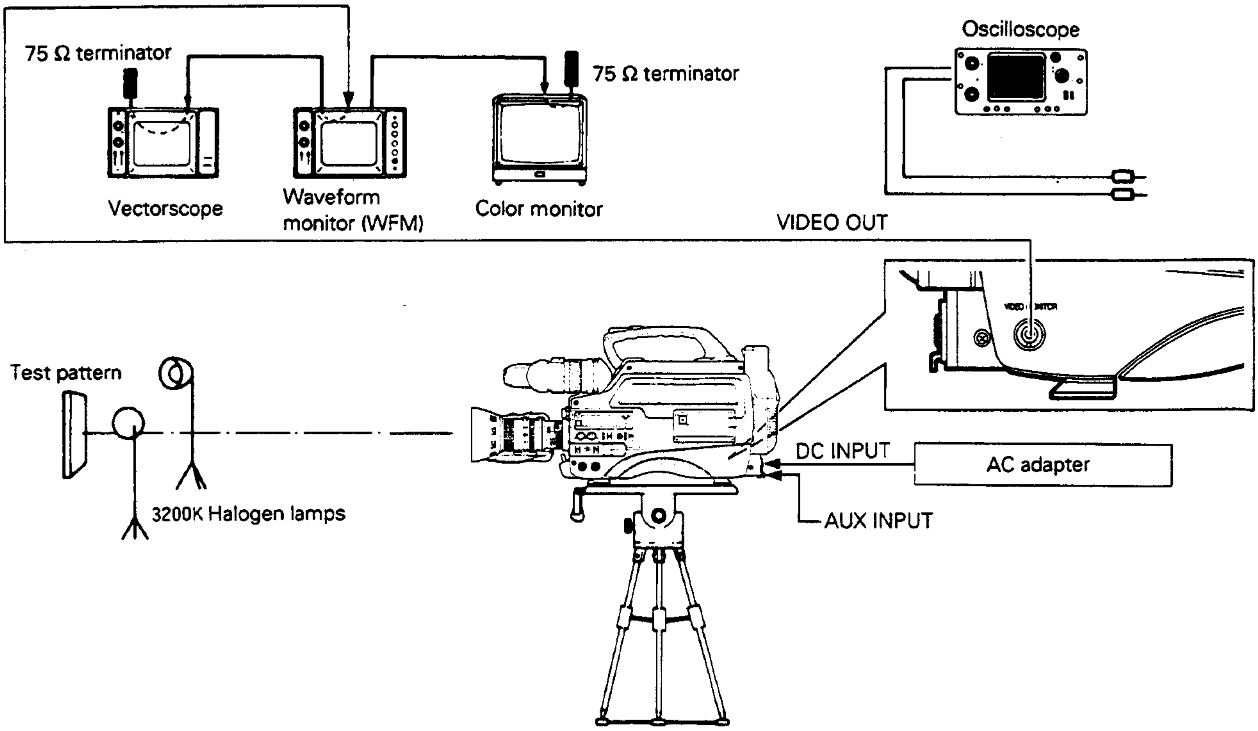

75 Ω terminator
75 Ω terminator
Vectorscope
Waveform monitor (WFM)
Color monitor
Oscilloscope
VIDEO OUT
Test pattern
3200K Halogen lamps
DC INPUT
AC adapter
AUX INPUT

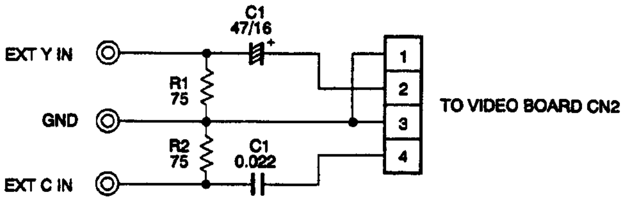
Fig. 3-4-1 Standard setup

3.4.2 Supply of external video signal to VTR

This model needs to input the signals mentioned in the previous section 3.3.5, however, the input method for the NTSC model differs by serial numbers as Ⓐ and Ⓑ mentioned below. On the other hand, the PAL model can be inputted by the input method of Ⓑ in common throughout all serial numbers.

Ⓐ For the NTSC Sets whose serial numbers ****1443 and before.

Make such a circuit as shown in Fig. 3-4-2 and connect it to CN2 on the VIDEO board. For the connection, it is suggested to cut the extension cable connected with CN2 and to use it for this purpose.



R1, R2 : QRD161J-750
C1 : QETC1AM-476
C2 : QFN31HK-223

Fig. 3-4-2 Signal input circuit

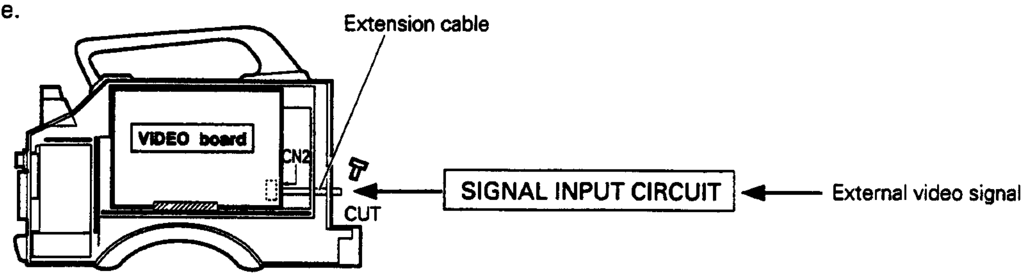


Fig. 3-4-3 Supply of external video signal

Note:
If the connection cable was cut according to the suggestion, make sure insulate it with insulation tape or the like not to get other circuits affected by it.

Ⓑ For the NTSC sets whose serial numbers are ****1444 and after, and for all PAL sets.

There is a test point for external video signal input on the VIDEO board. Input an external video signal as mentioned below.

1. Make a shortcircuit between TP26 and TP28 on the VIDEO board.
2. Supply Y signal to TP27 and C signal to TP29.

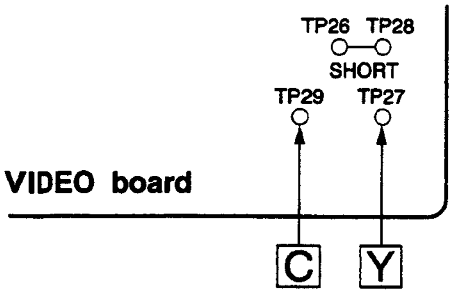


Fig. 3-4-4

3.4.3 Simultaneous display in both viewfinder and monitor

If the POWER switch is turned on while the UP and DOWN buttons on the VCR panel are pressed together, the same display as shown in the viewfinder also appears on the monitor screen. If is recommended to perform "3.6.7 adjustment of automatic control system" in this condition for carrying it out easily.

For cancelling this condition of simultaneous display in both viewfinder and monitor, turn the POWER switch off once and again turn it on to restore the set to the normal display mode.

3.5 STANDARD SWITCH SETTING

The following tables list switches and VRs whose settings are subject to change for adjustment, and the tables show standard setting of the respective switches.

Set the following switches as shown below and proceed to each adjustment step with this setting unless other setting is indicated.

- Internal switches and VRs

Board	Symbol No.	Switch Name	Standard Seting
DR	VR101, 201, 301	V. SUB	MAX (↺)
PR1	VR102, 202, 302	FLARE	MAX (↺)
PR2	VR1	KNEE	MAX (↻)
	VR2	WHITE CLIP	MAX (↻)
	S1	N. SLICE	6/12
SE	VR201	VF PEAKING	Mechanical Center position
CC	S1	CC ON/OFF	OFF

- External operation switches

Switch Name	Standard Seting
W. BAL	PRESET
SOURCE SELECT	AUX

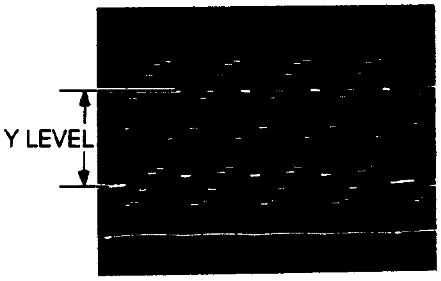
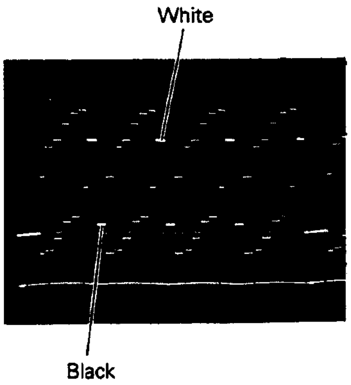
All other switches should be set at the respective initial setting positions (setting positions on shipment). (Refer to Section 7.)

3.6 ADJUSTMENT OF CAMERA SECTION

3.6.1 Adjustment of SSG

No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts(Ⓣ) Adjustment level (☆)	Adjustment procedure
1	SC frequency adjustment	•Frequency counter		◎ TP10 : B-8B[SE] <NTSC> Ⓣ fck (VC1: B-1A) [DR] ☆ 3.579545 MHz <PAL> Ⓣ fsc (VC401:B-9C) [SE] ☆ 4.433619 MHz	1) Adjust VR to obtain the specified level at the measuring point.
2	Error voltage adjustment (Only PAL model)	•Digital voltmeter		◎ TP1: B-1A[DR] Ⓣ E00 (VR2: B-2A)[DR] ☆ 2.5 VDC	**Note** This adjustment is performed only PAL model. 1) Adjust VR to obtain the specified level at the measuring point.

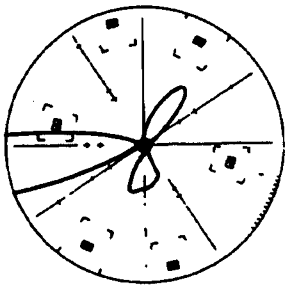
3.6.2 Adjustment of encoder

No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts(Ⓣ) Adjustment level (☆)	Adjustment procedure
1	Test signal level adjustment	• Oscilloscope (V-rate, 10:1) or WFM • Test signal (simple color bars) output	• S1 [SE]: ON for adjustment • S1: OFF after adjustment	◎ VIDEO MONITOR terminal (with 75 Ω terminator) Ⓣ Y LEVEL (VR1: B-6A) [SE] ☆ 0.55 Vp-p [77 IRE] (NTSC) ☆ 0.525 Vp-p [75%] (PAL)	1) Set the switch S1 (:B-9B) on the SE board to "ON". 2) Adjust the Y signal (excluding sync signal) level to be specified level with VR1 [SE]. 
2	Carrier balance adjustment	• Oscilloscope (H-rate, 10:1) or WFM • Test signal (simple color bars) output	• S1 [SE]: ON for adjustment • S1: OFF after adjustment	◎ VIDEO MONITOR terminal (with 75 Ω terminator) Ⓣ B-Y C. BAL (VR5 : B-4A) [SE] Ⓣ R-Y C. BAL (VR6 : B-4A) [SE] ☆ Minimum carrier leak	1) Alternately turn VR5 and VR6 to minimize carrier leak both in white and black portions 

Note: When vectorscope is used for oscilloscope

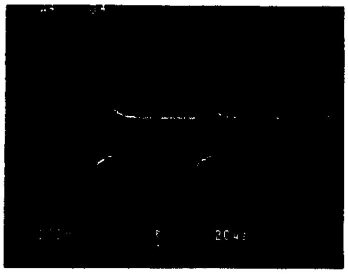
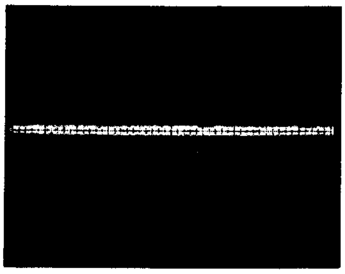
(1) Set the GAIN control of the vectorscope to the maximum position.

(2) Turn VR5 and VR6 alternately to position both spots in the center of the screen.



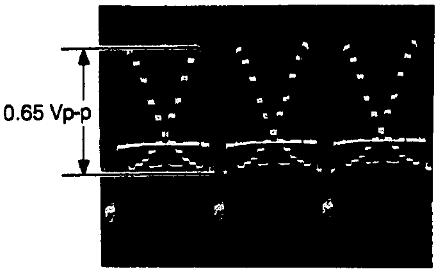
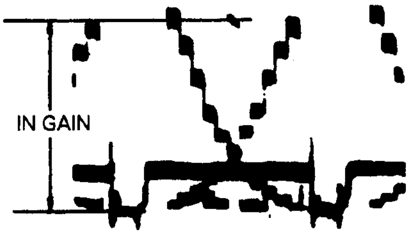
No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (ⓣ) Adjustment level (☆)	Adjustment procedure
3	Chroma signal adjustment	• Vectorscope • Test signal (simple color bars) output	• S1 [SE] : ON for adjustment • S1 : OFF after adjustment	◎ VIDEO MONITOR terminal (with 75 Ω terminator) ⓣ QUAD (VR2: B-4C) [SE] ⓣ CHROMA BAL (VR3: B-5A) [SE] ⓣ CHROMA (VR4: B-5C) [SE]	1) Set the GAIN control of the vectorscope to "CAL" or 75 % position (preset position). 2) Adjust the VRs to position all the spots of R, G, B, Mg, Cy and Yl in the specified points respectively. 3) Restore the switch S1 to the "OFF" position.

3.6.3 Adjustment of black level

1	Master black adjustment	• Oscilloscope (H-rate, 10:1) or WFM • Lens: Capped		◎ TP201: B-3D [PR2] ⓣ BLACK LEVEL (VR1: B-2A) [PR1]	1) Close the lens with the lens cap. 2) Adjust VR1 so that the black level in video period correspond to the blanking period in the center.  NG  OK

No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (Ⓣ) Adjustment level (☆)	Adjustment procedure

3.6.4 Adjustment of input gain (Setting of input signal level)

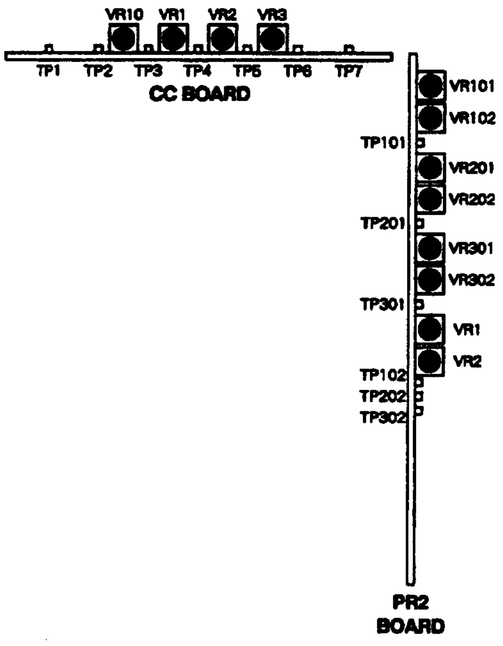
1	Iris setting	• Oscilloscope (H-rate, 10:1) • Gray scale chart (Just scan)		◎ TP201 : B-3E[PR1] Ⓣ Lens iris ☆ 0.65 Vp-p	1) While shooting the gray scale chart, adjust the white level to be as specified with the lens iris. 
2	Input gain adjustment			<B-channel> ◎ TP102: B-2A[PR1] Ⓣ B. INGAIN (VR101: B-2D) [PR1] ☆ 1.2 Vp-p <G-channel> ◎ TP202: B-2A[PR1] Ⓣ G. INGAIN (VR201: B-2D) [PR1] ☆ 1.2 Vp-p <R-channel> ◎ TP302: B-3A [PR1] Ⓣ R. INGAIN (VR301: B-3D) [PR1] ☆ 1.2 Vp-p	1) Check to see whether the input gain on the respective channels is on the specified level or not. If some channel has a wrong gain, adjust the VR specified for the channel. 

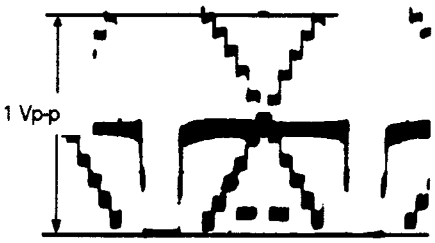
No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (Ⓣ) Adjustment level (☆)	Adjustment procedure

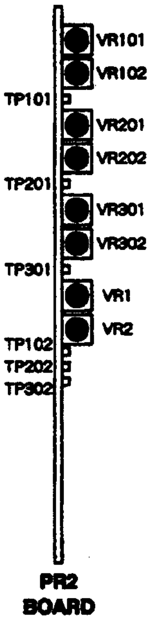
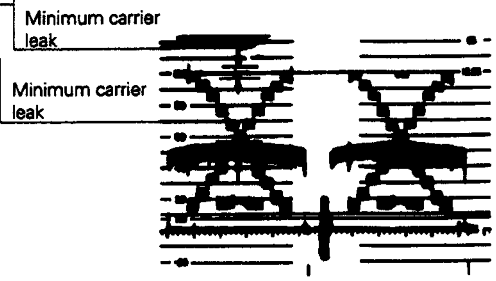
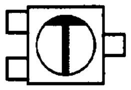
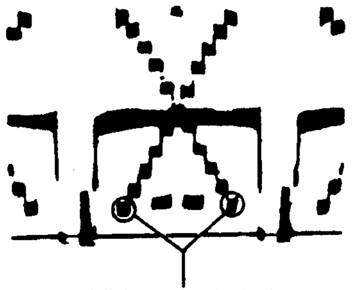
3.6.5 Adjustment of video level

This adjustment must follow 3.6.4 Adjustment of input gain. Make sure to perform this adjustment after the input gains have been set correctly.

No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (Ⓣ) Adjustment level (☆)	Adjustment procedure
1	Preparation	• Oscilloscope (H-rate, 10:1) • Gray scale chart (Just scan)		◎ TP202: B-3B [PR2] Ⓣ Lens iris ☆ 1.2 Vp-p	1) While shooting the gray scale chart, adjust the white level to be as specified with the lens iris.
2	G-channel, Gain and Gamma adjustment			◎ TP201: B-3D [PR2] Ⓣ G. GAMMA (VR201: B-3E) [PR2] Ⓣ G. GAIN (VR202: B-3D)) [PR2]	1) While shooting the gray scale chart and observing its waveform with the oscilloscope, adjust the VRs so that the stairstep wave is shaped linear and the white level is 1.0 Vp-p.
				◎ TP202: B-3B [PR2] Ⓣ 1H G LEVEL (VR101:B-3E) [CC] ☆ 1.4 Vp-p	2) Adjust the VR to obtain the specified level at the measuring point.

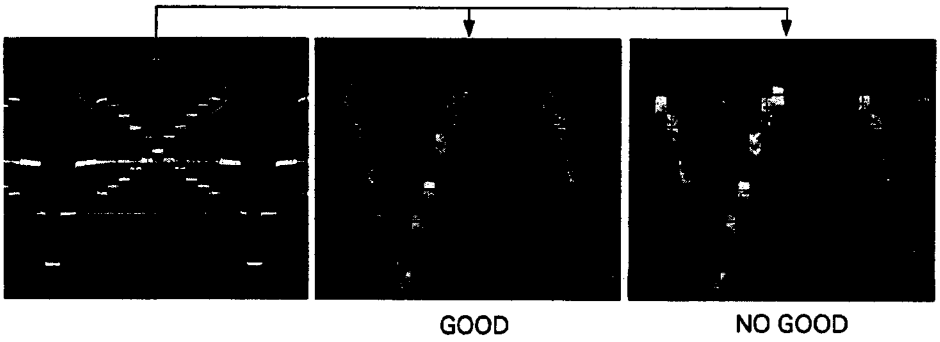
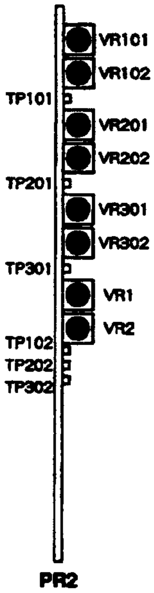
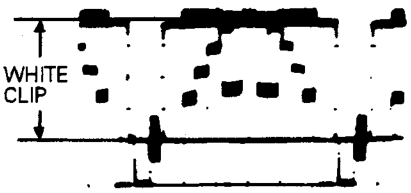

VR10
VR1
VR2
VR3
TP1
TP2
TP3
TP4
TP5
TP6
TP7
CC BOARD
VR101
VR102
TP101
VR201
VR202
TP201
VR301
VR302
TP301
VR1
VR2
TP102
TP202
TP302
PR2 BOARD



No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (Ⓣ) Adjustment level (☆)	Adjustment procedure
3	R- & B-channels, Gain and Gamma adjustment	• Oscilloscope (H-rate, 10:1) or WFM • Gray scale chart (Just scan)	 VR101 VR102 TP101 VR201 VR202 TP201 VR301 VR302 TP301 VR1 VR2 TP102 TP202 TP302 PR2 BOARD	◎ VIDEO MONITOR terminal (with 75 Ω terminator) Ⓣ B. GAIN (VR102: B-3E)[PR2] Ⓣ R. GAIN (VR302: B-3D)[PR2] Ⓣ B. GAMMA (VR101: B-3E) [PR2] Ⓣ R. GAMMA (VR301:B-3D) [PR2] Ⓣ G. GAIN (VR202: B-3D)[PR2] Ⓣ G. GAMMA (VR201: B-3E) [PR2] <NTSC> ☆ Crosspoint: 0.41 Vp-p [58 IRE] ☆ White peak: 0.714 Vp-p [100 IRE] <PAL> ☆ Prosspoint: 0.39 Vp-p [56%] ☆ White peak: 0.7 Vp-p [100%]	1) While observing the waveform of the gray scale chart, minimize the white level and carrier at the crosspoint with VR101, VR102, VR301 and VR302 for the respective channels.  2) Check the signal level on the respective channels. If there is something wrong, adjust it to satisfy the specified value with VR101, VR102, VR201, VR202, VR301 or VR302.
4	Flare level adjustment	• Oscilloscope (H-rate, 10:1) or WFM • Gray scale chart (Just scan)		Ⓣ R FLARE (VR302: B-3B) [PR1]	1) Set the R FLARE VR to the position shown below. 
				◎ VIDEO MONITOR terminal (with 75 Ω terminator) Ⓣ B FLARE (VR102: B-2B) [PR1] Ⓣ G FLARE (VR202: B-2B) [PR1] ☆ Carrier leak: Minimum	2) While observing the waveform of the gray scale chart, adjust the VRs so that carrier leak in the black portion of the gray scale chart is minimum at the respective measuring points.  3) Rapidly open the lens iris from the closed status and vice versa repeatedly while confirming that there is no coloring observed in the picture during the lens iris operation. If the picture is colored in some part, fine adjust VR102 and VR202.

No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (ⓣ) Adjustment level (☆)	Adjustment procedure

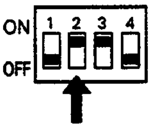
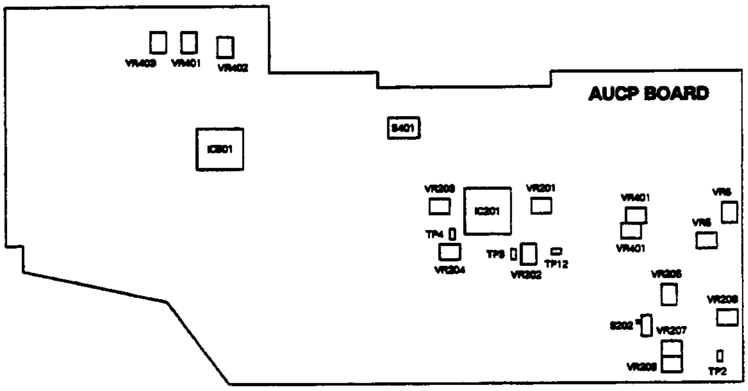
3.6.6 Adjustment of knee slope and white clip

This adjustment must be performed after 3.6.5 Adjustment of video level has been completed.					
1	Knee point adjustment	• Oscilloscope (H-rate, 10:1) or WFM • Gray scale chart (Just scan)		◎ VIDEO MONITOR terminal (with 75 Ω terminator) ⓣ Lens iris ☆ 0.714 Vp-p [100 IRE] (NTSC) ☆ 0.7 Vp-p [100%] (PAL)	1) While shooting the gray scale chart, adjust the white level to be as specified.
				ⓣ KNEE (VR1: B-3C) [PR2]	2) Turn VR1 counterclockwise slowly from the clockwisemost position and set it to the position just before the white peak is clipped.
					
2	White clip adjustment	 VR101 VR102 TP101 VR201 VR202 TP201 VR301 VR302 TP301 VR1 VR2 TP102 TP202 TP302PR2 BOARD		◎ VIDEO MONITOR terminal (with 75 Ω terminator) ⓣ WHITE CLIP (VR2: B-3C) [PR2] ☆ 0.785 Vp-p [110 IRE] (NTSC) ☆ 0.77 Vp-p [110%] (PAL)	1) Open the lens iris for two stops or more. 2) Adjust the white clip level to be as specified with VR2. 

No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (ⓣ) Adjustment level (☆)	Adjustment procedure

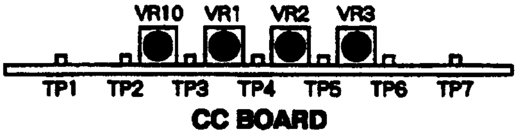
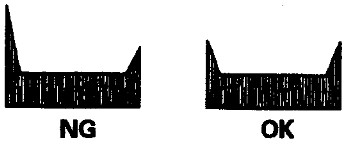
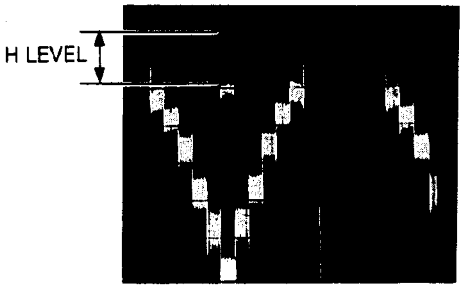
3.6.7 Adjustment of automatic control system

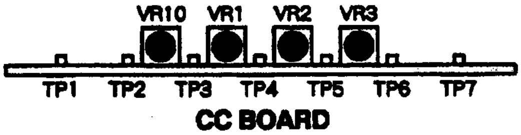
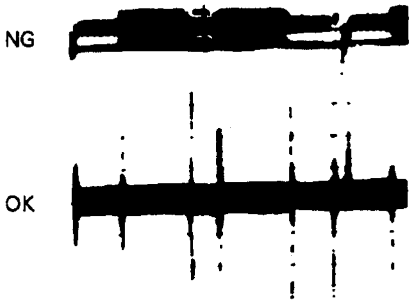
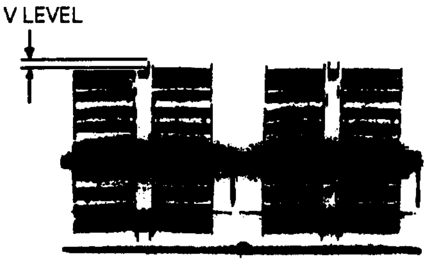
- Proceed to this adjustment after confirming that the adjustments of 3.6.4 to 3.6.6 have been complete and video output is adjusted to the specified level.
- Activate the check mode through this adjustment.
- Set the IRIS MODE switch to "M" to operate the iris manually.

No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (ⓣ) Adjustment level (☆)	Adjustment procedure
1	Preparation	• Oscilloscope (H-rate, 10:1) or WFM • Gray scale chart (Just scan)	<Check mode> • S401-2 [AUCP]: ON 	◎ VIDEO MONITOR terminal (with 75 Ω terminator) ⓣ Lens iris ☆ 0.714 Vp-p [100 IRE] (NTSC) ☆ 0.7 Vp-p [100%] (PAL)	1) While shooting the gray scale chart, adjust the white level as specified with the lens iris.
2	NAM value adjustment  VR403 VR401 VR402 AUCP BOARD S401 IC801 VR203 IC201 VR201 TP4 VR204 TP5 VR202 TP12 VR401 VR401 VR6 VR5 VR205 VR208 S202 VR207 VR209 TP2			◎ Viewfinder screen ⓣ NAM ERROR (VR403: B-8A) [AUCP] ☆ 0 (zero)	**Note:** NAM (No Additive Mix) signal is used as a reference signal to control the lens iris by the CPU. 1) Adjust the VR so that the indication of the viewfinder display becomes "0" (zero). **– CHECK MODE –** **R – Y : *** **B – Y : *** **NAM ERROR : 0 ⇦** **GAIN 0 dB**
3	Auto white adjustment			◎ Viewfinder screen ⓣ R-Y (VR401: B-8A) [AUCP] ⓣ B-Y (VR402: B-8A) [AUCP] ☆ 0 (zero)	1) Adjust the VR so that the indication of the viewfinder display becomes "0" (zero). 2) Turn off the switch S401-2 to cancel the check mode. **– CHECK MODE –** **R – Y : 0 ⇦** **B – Y : 0 ⇦** **NAM ERROR : 0** **GAIN 0 dB**

No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (Ⓣ) Adjustment level (☆)	Adjustment procedure

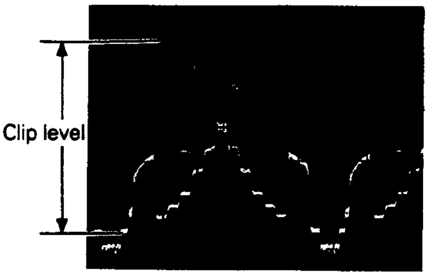
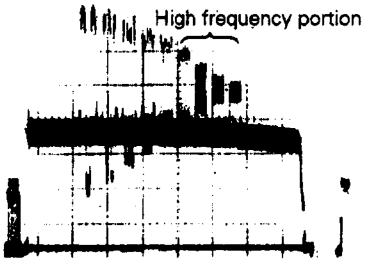
3.6.8 Adjustment of contour corrector

Proceed to this adjustment after confirming that the adjustments of 3.6.4 to 3.6.6 have been complete and video output is adjusted to the specified level.					
1	H. contour level adjustment	• Oscilloscope (H-rate, 10:1) or WFM • Gray scale chart (Just scan)	• CC (S1) [CC]: ON	Ⓣ V. LEVEL (VR2 : B-3B) [CC] ☆ Full counterclockwise position	1) Turn VR2 full counterclockwise.
		 VR10 VR1 VR2 VR3 TP1 TP2 TP3 TP4 TP5 TP6 TP7 CC BOARD		◎ VIDEO MONITOR terminal (with 75 Ω terminator) Ⓣ Lens iris ☆ 0.57 Vp-p [80 IRE] (NTSC) ☆ 0.56 Vp-p [80%] (PAL)	2) Slowly move the camera up and down to adjust the position of the CCD to the test pattern and fix the camera position when the contour level of the windows of the gray scale chart is even.  3) Adjust the video level as specified with the lens iris.
				◎ VIDEO MONITOR terminal (with 75 Ω terminator) Ⓣ H. LEVEL (VR3: B-3C) [CC] ☆ 0.07 Vp-p	4) Adjust VR3 so that the H. contour level corresponds to the specified level. 

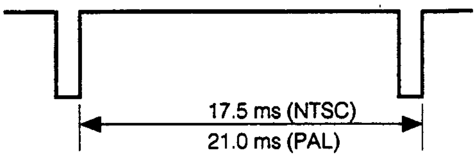
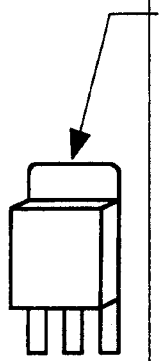
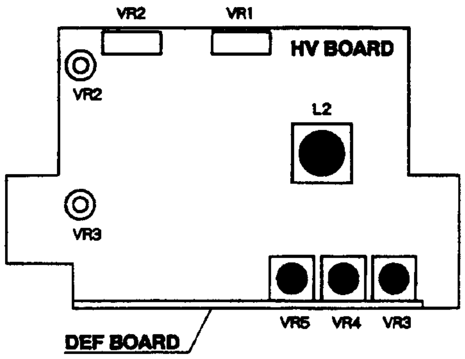
No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (Ⓣ) Adjustment level (☆)	Adjustment procedure
2	V. contour level adjustment	• Oscilloscope (V-rate, 10:1) or WFM • Gray scale chart (Just scan)	• CC (S1) [CC]: ON	Ⓣ V. LEVEL (VR2: B-3B) [CC] ☆ Full clockwise position	1) Turn VR2 full clockwise.
		 VR10 VR1 VR2 VR3 TP1 TP2 TP3 TP4 TP5 TP6 TP7 CC BOARD		◎ TP4: B-3B [CC] Ⓣ V. BAL (VR1: B-3B) [CC] ☆ Minimum video components	2) While observing the waveform with the oscilloscope set at V-rate, adjust VR1 to minimize video components. 
				◎ VIDEO MONITOR terminal (with 75 Ω terminator) Ⓣ V. LEVEL (VR2: B-3B) [CC] ☆ 0.07 Vp-p	3) Adjust VR2 so that the V. contour level corresponds to the specified level. 

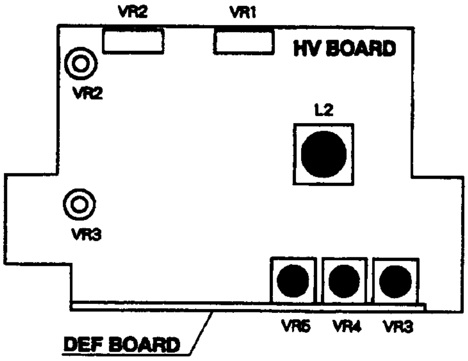
No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (Ⓣ) Adjustment level (☆)	Adjustment procedure

3.6.9 Adjustment of CCD driver

The following adjustment is not necessary to be adjusted except for the occasion that the optical block is replaced.					
1	Vsub voltage adjustment	• Oscilloscope (H-rate, 10:1) • Gray scale chart (Just scan)		<B-channel> ◎ TP101: B-3E [PR1] Ⓣ B. VSUB (VR101: B-2D) [DR] ☆ 2.8 Vp-p <G-channel> ◎ TP201: B-3E [PR1] Ⓣ G. VSUB (VR201: B-2E) [DR] ☆ 2.3 Vp-p <R-channel> ◎ TP301: B-3E (PR1] Ⓣ R. VSUB (VR301: B-1E) [DR] ☆ 2.8 Vp-p	1) While shooting the gray scale chart, set the lens iris to a position where the white signal of the gray scale chart is clipped. 2) Adjust the VRs to obtain the specified levels at the measuring points for respective channels. 
2	Half-pitched sampling timing adjustment	• Oscilloscope (H-rate, 10:1) • Gray scale chart (Just scan)	• CC (S1) [CC]: OFF for adjustment CC (S1) [CC]: ON after adjustment	◎ VIDEO MONITOR terminal (with 75 Ω terminator) Ⓣ HP (VR1: B-3C) [DR] ☆ Highest resolution	1) Set the CONTOUR ON/OFF switch (S1) on the CC board to OFF. 2) Shoot the in-mega cycle chart. 3) While observing the frequency response, adjust the VR to maximize the high frequency level.  4) Return the CONTOUR ON/OFF switch to the ON position.

3.7 ADJUSTMENT OF VIEWFINDER

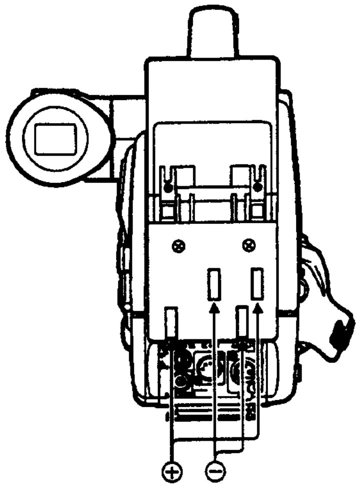
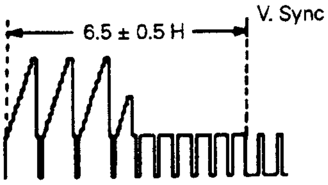
No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (Ⓣ) Adjustment level (☆)	Adjustment procedure
1	V. HOLD adjustment	• Oscilloscope (V-rate)		◎ TP1 [DEF] Ⓣ V. HOLD (VR5) [DEF] ☆ 17.5 ms (NTSC) ☆ 21.0 ms (PAL)	1) Adjust the VR so as to obtain the specified level at the measuring point. 
9	H. HOLD adjustment	• Frequency counter		◎ Drain of Q1 [HV] or ◎ CN4-Pin 1 [HV] **Note** When the pin 1 of CN4 is used as the measuring point, use the 1:1 probe for measurement. Ⓣ H. HOLD (VR3) [DEF] ☆ 16.0 to 17.1 kHz	1) Adjust the VR to obtain the specified level at the measuring point.
3	H. linearity adjustment			◎ Viewfinder screen Ⓣ H. LIN (L2) [HV]	1) Adjust the VR to make the outer circle of the resolution chart or registration chart symmetric in both sides.
4	V. HEIGHT adjustment	• Resolution chart or Registration chart	 VR2 VR1 HV BOARD VR2 L2 VR3 VR5 VR4 VR3 DEF BOARD	◎ Viewfinder screen Ⓣ V. HEIGHT (VR4) [DEF] Ⓣ V. HOLD (VR5) [DEF]	1) While shooting the resolution chart or registration chart, adjust the VR so that the center circle of the chart is observed as a perfect circle centered in the viewfinder screen. During this adjustment, be careful not to output flyback line in the viewfinder screen. 2) When flyback line is observed despite of repeated adjustments, make a blank in the upper part of the screen with the V. HOLD VR first. Then, adjust the vertical position of the picture with the V. HEIGHT VR and place the circle in the center of the screen with the centering magnet.

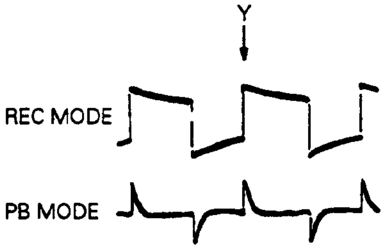
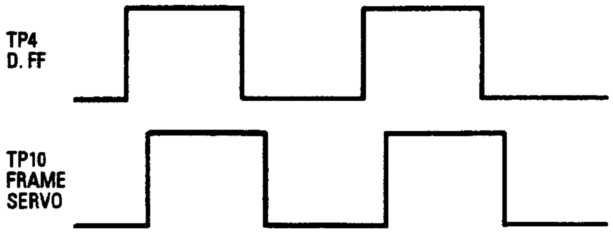
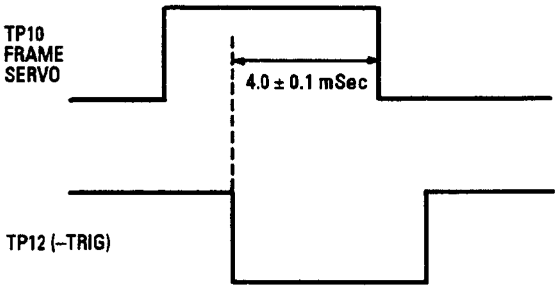
No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (ⓣ) Adjustment level (☆)	Adjustment procedure
5	Centering adjustment			◎ Viewfinder screen ⓣ Deflecting yoke ⓣ Centering magnet	1) Adjust the deflecting yoke to position the picture horizontally in the viewfinder screen. 2) Adjust the centering magnet to position the center circle in the center of the viewfinder screen.
6	SUB-BRIGHT adjustment		• CONT (VR1) [HV]: Maximum (Full clockwise position) • BRIGHT (VR2) [HV]: Minimum (Full counter-clockwise position)	◎ Viewfinder screen ⓣ SUB BRIGHT (VR4) [HV]	1) Set the BRIGHT VR on the front panel to the minimum position, while set the VR to the maximum position. 2) Adjust the SUB BRIGHT VR so that the raster is seen dimly. 3) As the BRIGHT VR is set at the MAX position, check to see if a flyback line is observed on the viewfinder screen or not. If it is appearing, turn down the luminance with the SUB BRIGHT VR until it disappears from the viewfinder screen.
7	Focus adjustment	 VR2 VR1 HV BOARD VR2 L2 VR3 VR5 VR4 VR3 DEF BOARD		◎ Viewfinder screen ⓣ FOCUS (VR3) [HV]	1) Adjust the VR so as to obtain the best focus.

No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (Ⓣ) Adjustment level (☆)	Adjustment procedure

3.8 ADJUSTMENT OF SYSCON/SERVO SYSTEM

- When supplying an external signal to the set, follow the instruction of "3.4.2 Supply of external video signal to VTR".
- For the items that need to input color bars signal, the test signal (with S1 set to ON) is substitutable for the color bars signal if the whole steps of "3.6.2 Adjustment of encoder" have been complete.

1	Battery voltage detection adjustment	• Digital voltmeter	• REC	Ⓣ B (VR3 : B-6A) [S/S] 	1) Remove the lower cover of the battery holder. 2) While supplying the power through the battery terminal, set the VTR to the REC mode. 3) Turn down the supply voltage to 11.1 VDC as the VTR is set in the REC mode. 4) Turn the VR until the set enters the BATT. WARNING status (REC LED blinks). Note: Don't turn the VR excessively. 5) Adjust the supply voltage measured at the battery terminal to the normal level (12 V DC). (REC LED is continuously lighting.) 6) While decreasing the supply voltage to the battery terminal gradually, confirm that the set enters the BATT. WARNING status with the voltage of 11.1 ± 0.1 V. 7) Decrease the voltage furthermore and confirm that the set enters the off-operation status from the REC PAUSE mode with the supply voltage of 10.3 to 10.6 V.
2	Switching point adjustment	• Oscilloscope • MHP (NTSC) MHPE (PAL) alignment tape	• PB	◎ VIDEO MONITOR terminal Ⓣ SW. MM (VR2: B-7E) [S/S]	1) Connect the oscilloscope to TP4 [S/S] for external trigger. (Sweep time/Div. range: 50 μ, Slope: –) 2) Play the alignment tape MHP while adjusting the TRACKING VR to maximize the FM waveform. 3) Adjust the VR so that the switching point is 6.5 H before V. sync. 4) Change the oscilloscope setting for + slope observation while checking that a time lag of the switching point is within 1 H. 

No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts(Ⓣ) Adjustment level (☆)	Adjustment procedure
3	Tracking preset adjustment	• Oscilloscope • Test signal (simple color bars) output	• REC ↓ PB	◎ TP11 [S/S] Ⓣ TRK (VR1: B-2C) [S/S]	1) Set the TRACKING VR (VR1 : VO board) to the mechanical center position. 2) Connect a probe of the oscilloscope to TP11 and the other to TP4 [S/S] for external trigger. 3) Enter the set into the REC mode. 4) Adjust the X-axis (horizontal axis) to position the rise-up point of the CTL pulse coming out of TP11 on an optionally determined Y-axis. 5) Enter the set into the PB mode and adjust the VR so that the rise-up point of TP11's CTL pulse is positioned on the Y-axis determined in the preceding step 4). 
4	Frame servo adjustment  (a)  (b)	• Oscilloscope • Color bars signal input	• REC	◎ TP4: B-8B [S/S] ◎ TP10: B-8E [S/S] ◎ TP12: B-7E [S/S] Ⓣ F. SERVO (VR4: B-7F) [S/S] ☆ 4.0 ± 0.1 msec	1) Connect the oscilloscope's probes to TP4 (for CH1) and TP10 (for CH2). 2) In the REC mode, confirm that the FRAME SERVO pulse and the D. FF pulse are mutually locked. 3) Connect the oscilloscope's probes to TP10 (CH1) and TP12 (CH2). 4) Adjust the VR so that the period between the trailing edge of TP12's signal and that of TP10's signal is 4.0 ± 0.1 msec.

No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (Ⓣ) Adjustment level (☆)	Adjustment procedure

3.9 ADJUSTMENT OF AUDIO SYSTEM

- When supplying an external signal to the set, follow the instruction of "3.4.2 Supply of external video signal to VTR".
- For the items that need to input color bars signal, the test signal (with S1 set to ON) is substitutable for the color bars signal if the whole steps of "3.6.2 Adjustment of encoder" have been complete.

3.9.1 Adjustment of Hi-Fi audio

1	FM audio carrier frequency adjustment	• Frequency counter • Color bars signal • Without input of audio signal	• VHS SP • (S-VHS: OFF) • REC	◎ TP4 [AUCP] Ⓣ L-ch CARR. ADJ (VR204) [AUCP] ☆ 1.300 ± 0.005 MHz (NTSC) ☆ 1.400 ± 0.005 MHz (PAL)	1) Input the color bars signal. 2) Adjust the VRs to obtain the specified levels at the respective measuring points.
				◎ TP3 [AUCP] Ⓣ R-ch CARR. ADJ (VR202) [AUCP] ☆ 1.700 ± 0.005 MHz (NTSC) ☆ 1.800 ± 0.005 MHz (PAL)	
2	FM audio PB level adjustment	• Audio tester • MH-F6 (NTSC) MH-F8 (APL) alignment tape • Without input of audio signal	• MONITOR VRs (VR3, 4) [AUCP]: ↓ Maximum (↻) • PB	◎ AUDIO MONITOR terminal (non-load) Ⓣ L-ch PB LEVEL (VR203) [AUCP] Ⓣ R-ch PB LEVEL (VR201) [AUCP] ☆ –6.0 dBs	1) Turn the MONITOR VRs (VR3, VR4) on the AUCP board to the utmost counterclockwise position respectively. 2) Play the alignment tape (1 kHz portion) while adjusting the TRACKING VR to maximize the FM waveform. 3) Adjust the VRs to obtain the specified levels at the measuring points respectively for the L and R channels.
			• PB	◎ AUDIO MONITOR terminal Ⓣ L-ch MONITOR (VR3) [AUCP] Ⓣ R-ch MONITOR (VR4) [AUCP] ☆ –10.0 dBs	4) Adjust the VRs to obtain the specified levels at the measuring points respectively for the L and R channels.
3	EE level adjustment	• Audio tester • 1 kHz, +4 dBs signal	• AUX REC LEVEL SW (S3) [AUCP]: ↓ "MANU" • EE	◎ AUDIO MONITOR terminal (non-load) Ⓣ AUX-AUDIO REC LEVEL (VR1) [AUCP] ☆ –10.0 dBs	1) Set the AUX REC LEVEL switch to "MANU" position. 2) Input a 1 kHz, +4 dBs signal through the AUX INPUT terminal. 3) Adjust the AUX-AUDIO REC LEVEL VR on the right side cover to obtain the specified level at the measuring point. **Note:** Never turn VR1 [AUCP] henceforwards.

No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (Ⓣ) Adjustment level (☆)	Adjustment procedure
4	Audio level meter adjustment	• 1 kHz, +4 dBs signal	• HIFI REC SW (S2) [AUCP]: ↓ "ON" • EE	◎ LEVEL METER Ⓣ L-ch METER ADJ (VR5) [AUCP] Ⓣ R-ch METER ADJ (VR6) [AUCP] ☆ 0 dB	**Note :** This adjustment should be performed as the AUX-AUDIO REC LEVEL VR on the right side cover has been set according to the instruction of the item No. 3 "EE level adjustment". 1) Input a 1 kHz, +4 dBs signal through the AUX INPUT terminal. 2) Adjust the VRs so that the level meter indicates 0 dB for the signals of both R and L channels. (Turn on the level meter to start from the lower level side and set the VR when it indicates 0 dB with lighting.)
5	MIC input adjustment	• Audio tester • 1 kHz, −70 dBs signal	• SOURCE SELECT SW (S201): ↓ "MIC" for adjustment ↓ "AUX" after adjustment • EE	◎ AUDIO MONITOR terminal (non-load) Ⓣ MIC-AUDIO REC LEVEL (VR2) [AUCP] ☆ −10.0 dBs	1) Set the SOURCE SELECT switch to "MIC" position. 2) Input a 1 kHz, −70 dBs signal through the MIC IN terminal. 3) Adjust the MIC-AUDIO REC LEVEL VR on the right side cover to obtain the specified level at the measuring point. **Note:** Never turn this VR (VR2 on the AUCP board) after this adjustment. 4) Return the SOURCE SELECT switch to "AUX" position.

No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (Ⓣ) Adjustment level (☆)	Adjustment procedure

3.9.2 Adjustment of normal audio

- If the adjustment of the preceding section (3.9.1 Adjustment of Hi-Fi audio) has not been complete, adjust the item No. 2 (EE level adjustment) of 3.9.1 at least before proceeding to this section.
- Set the HIFI REC switch (S2) to "OFF" position.

No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (Ⓣ) Adjustment level (☆)	Adjustment procedure
1	Normal audio PB level adjustment	• Audio tester • MBA (NTSC) MBAE (PAL) alignment tape • Without input of audio signal	• PB	◎ AUDIO MONITOR terminal (non-load) Ⓣ PB LEVEL (VR207) [AUCP] ☆ –10.0 dBs (NTSC) ☆ –13.0 dBs (PAL)	1) Adjust the VR to obtain the specified level at the measuring point.
2	Normal audio PB frequency response adjustment	• Audio tester • MH-6 (NTSC) MH-8 (PAL) alignment tape • Without input of audio signal	• PB	◎ AUDIO MONITOR terminal (non-load) Ⓣ PB EQ (VR206) [AUCP] <NTSC> ☆ 10 kHz: +2.0 dB <PAL> ☆ 8 kHz: 0 dB (when 400 Hz signal level is 0 dB)	1) Play back the alignment tape while adjusting the TRACKING VR to maximize the FM waveform <NTSC> 2) On the condition that the 400 Hz signal level is 0 dB, adjust the VR so that the 10 kHz signal level is +2.0 dB. <PAL> 2) On the condition that the 400 Hz signal level is 0 dB, adjust the VR so that the 8 kHz signal level is 0 dB.

<NTSC>

400 Hz signal	10 kHz signal
0 dB (Reference)	+2.0 dB

<PAL>

400 Hz signal	8 kHz signal
0 dB (Reference)	0 dB

No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (Ⓣ) Adjustment level (☆)	Adjustment procedure
3	Normal audio bias level adjustment	• Audio tester • Without input of audio signal	• VHS SP • REC	◎ TP2 (GND: TP12) [AUCP] Ⓣ BIAS LEVEL (VR208) [AUCP] ☆ 5.0 mV rms	1) Adjust the VR to obtain the specified level at the measuring point.

No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (Ⓣ) Adjustment level (☆)	Adjustment procedure
4	Normal audio REC level adjustment	• Audio tester • 1 kHz, +4 dBs signal	• VHS SP • REC ↓ PB	◎ AUDIO MONITOR terminal (non-load) Ⓣ N. AUDIO REC LEVEL (VR205) [AUCP] ☆ –10.0 dBs	1) Input a 1 kHz, +4 dBs signal through the AUX INPUT terminal and record it. 2) Play back the recorded signal to check to see if the audio level is equivalent to the specified level or not. 3) If the audio level is coming off the specification, adjust the VR as shown below in the REC mode. • When audio level is –10 dBs or lower: Turn the VR counterclockwise (↺). • When audio level is –10 dBs or higher: Turn the VR clockwise (↻). 4) Enter the set into the PB mode again, and check that the audio level satisfies the requirement. 5) Repeat the preceding steps 3) and 4) until the specified level is obtained.
5	Normal audio REC frequency response adjustment	• Audio tester • 1 kHz/10 kHz, –16 dBs signal	• VHS SP • REC ↓ PB	◎ AUDIO MONITOR terminal (non-load) Ⓣ BIAS LEVEL (VR208) [AUCP] <NTSC> ☆ 10 kHz signal: 0 dB <PAL> ☆ 8 kHz signal: 0 dB (when 1 kHz signal level is 0 dB)	1) Input a 1 kHz, –16 dBs signal through the AUX INPUT terminal and record it. 2) Play back the recorded signal to check to see if the audio level of the 10 kHz(NTSC)/8 kHz (PAL) signal is 0 dB or not on the condition that the 1 kHz signal level is 0 dB. 3) If the audio level is coming off the specification, adjust the VR as shown below in the REC mode. • When audio level is 0 dB or lower: Turn the VR clockwise (↻). • When audio level is 0 dB or higher: Turn the VR counterclockwise (↺). 5) Repeat the preceding steps 2) and 3) until the audio level of the 10 kHz(NTSC)/8 kHz(PAL) signal is 0 dB on the condition that the 1 kHz signal level is 0 dB.

<NTSC>

1 kHz signal	10 kHz signal
0 dB (Reference)	0 dB

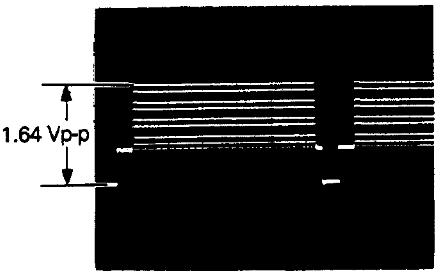
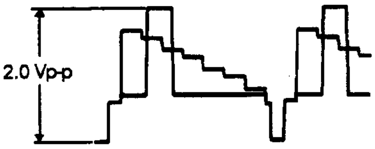
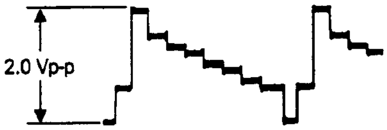
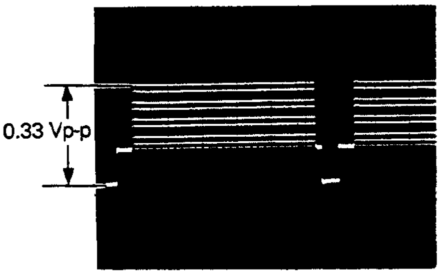
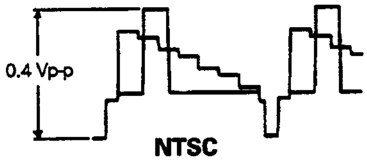
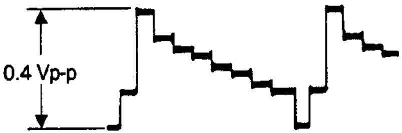
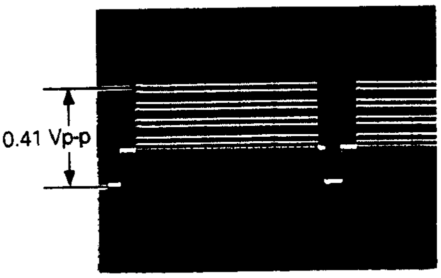
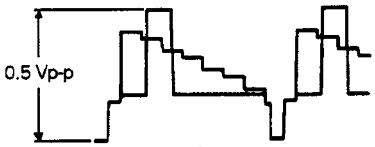
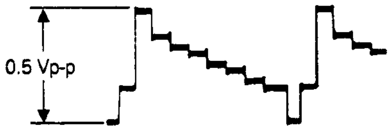
<PAL>

1 kHz signal	8 kHz signal
0 dB (Reference)	0 dB

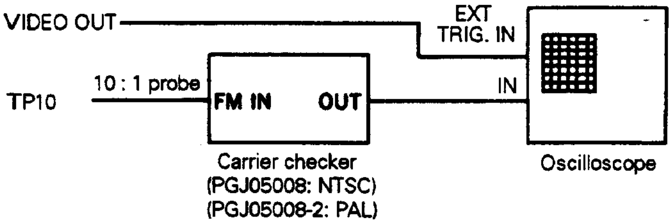
No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (Ⓣ) Adjustment level (☆)	Adjustment procedure

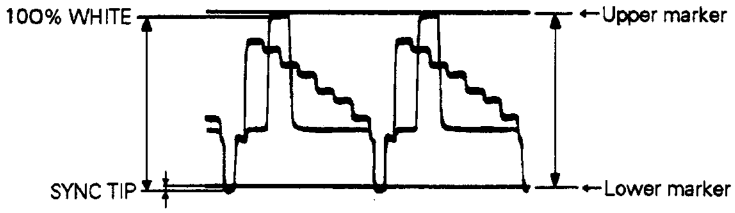
3.10 ADJUSTMENT OF VIDEO SYSTEM

- When supplying an external signal to the set, follow the instruction of "3.4.2 Supply of external video signal to VTR".
- For the items that need to input color bars signal, the test signal (with S1 set to ON) is substitutable for the color bars signal if the whole steps of "3.6.2 Adjustment of encoder" have been complete.

1	AGC adjustment	• Oscilloscope (H-rate, 10:1) • Color bars signal  In case of test signal	• EE	◎ TP13: B-4H[VIDEO] Ⓣ AGC LEV (VR21: B-6J) [VIDEO] <Color bars signal> ☆ 2.0 Vp-p <Test signal> ☆ 1.64 Vp-p	1) Input the color bars signal to the set. 2) Adjust the VR to obtain the specified level at the measuring point.  NTSC  PAL
2	REC processing input level adjustment	• Oscilloscope (H-rate, 10:1) • Color bars signal  In case of test signal	• S-VHS SP • REC	◎ TP8: B-9K [VIDEO] Ⓣ REC PROCESS IN LEV (VR11: B-9K) [VIDEO] <Color bars signal> ☆ 0.4 Vp-p <Test signal> ☆ 0.33 Vp-p	1) Input the color bars signal to the set. 2) Adjust the VR to obtain the specified level for the Y sianal at the measuring point. **Note:** If the specified level cannot be obtained with the VR, repeat the preceding item "1. AGC adjustment" before trying to the adjustment once again.  NTSC  PAL
3	REC processing output level adjustment	• Oscilloscope (H-rate, 10:1) • Color bars signal  In case of test signal	• S-VHS SP • REC	◎ TP9: B-9J [VIDEO] Ⓣ REC PROCESS OUT LEV (VR12: B-9J) [VIDEO] <Color bars signal> ☆ 0.5 Vp-p <Test signal> ☆ 0.41 Vp-p	1) Input the color bars signal to the set. 2) Adjust the VR to obtain the specified level for the Y signal at the measuring point.  NTSC  PAL

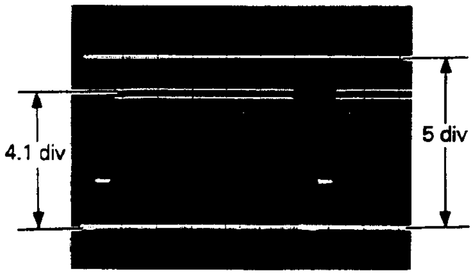
No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (Ⓣ) Adjustment level (☆)	Adjustment procedure
4	Carrier deviation adjustment	• Oscilloscope (H-rate, 10:1) • Carrier checker • Color bars signal	<VHS> • VHS-SP • REC	◎ TP10 : B-4I[VIDEO] Ⓣ N. CAR (VR13: B-6I) [VIDEO] ☆ 3.4 MHz (NTSC) ☆ 3.8 MHz (PAL) Ⓣ N. DEV (VR14: B-6I) [VIDEO] ☆ 4.4 MHz (NTSC) ☆ 4.8 MHz (PAL)	1) Connect the carrier checker to TP10 and enter the set into the VHS mode with the CAL/DEVI switch set to "DEVI" position. 2) Input the color bars signal to the set and record it in the VHS SP mode. 3) Adjust VR13 so that sync tip is levelled with the lower marker. 4) Adjust VR14 so that 100 % white level corresponds to the upper marker. In case of test signal 4) Set oscilloscope so that scale divisions from the lower marker to upper marker marker is 5 scales. 5) Adjust VR14 so that the 75% white of color bars corresponds to 4.1 scale divisions from sync tip.
			<S-VHS> • S-VHS SP • REC	◎ TP10: B-4I [VIDEO] Ⓣ S. CAR (VR15: B-6H) [VIDEO] ☆ 5.4 MHz Ⓣ S. DEV (VR16: B-6H) [VIDEO] ☆ 7.0 MHz	6) Input the color bars signal to the set and record it in the S-VHS SP mode. 7) Adjust VR15 so that sync tip is levelled with the 5.4 MHz marker. 8) Adjust VR16 so that 100 % white level corresponds to the 7.0 MHz marker. In case of test signal 8) Set oscilloscope so that scale divisions from the lower marker to upper marker is 5 scales. 9) Adjust VR16 so that the 75% white of color bars corresponds to 4.1 scale divisions from sync tip.


VIDEO OUT
EXT TRIG. IN
TP10
10 : 1 probe
FM IN
OUT
IN
Carrier checker
(PGJ05008: NTSC)
(PGJ05008-2: PAL)
Oscilloscope

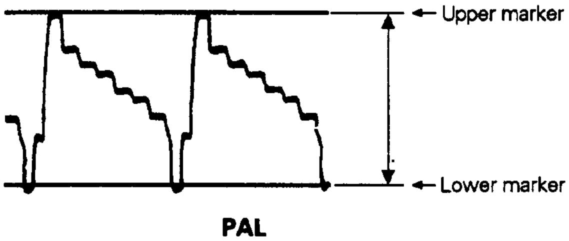

100% WHITE
Upper marker
SYNC TIP
Lower marker

NTSC

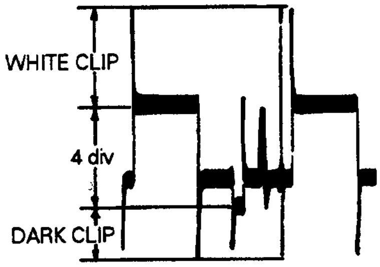
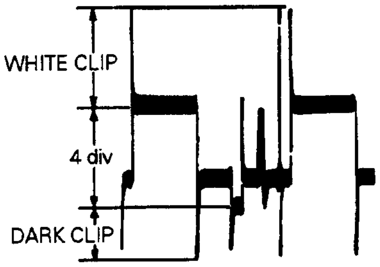
<Test signal>
☆ 75% white :
4.1 scale div (82%)

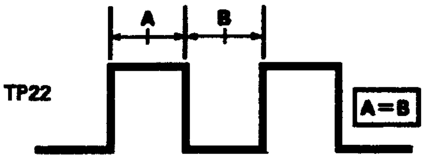
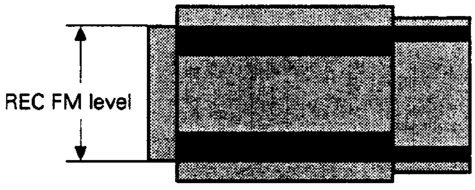
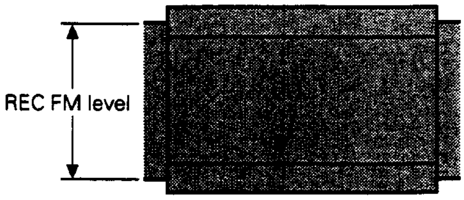


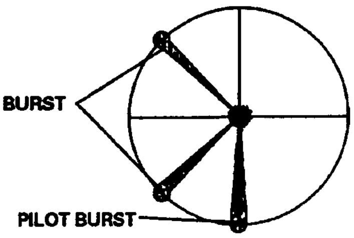
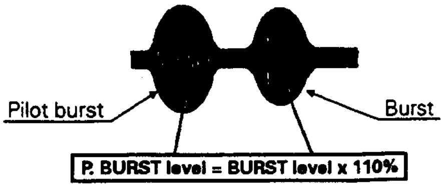
In case of test signal

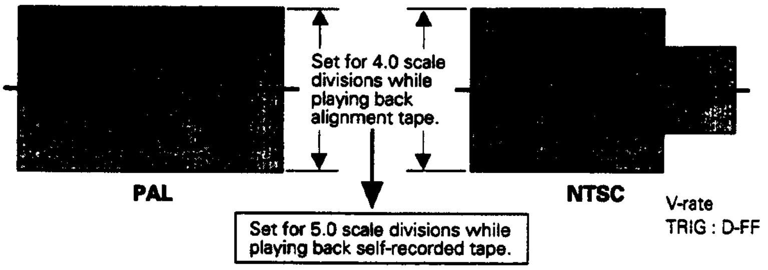
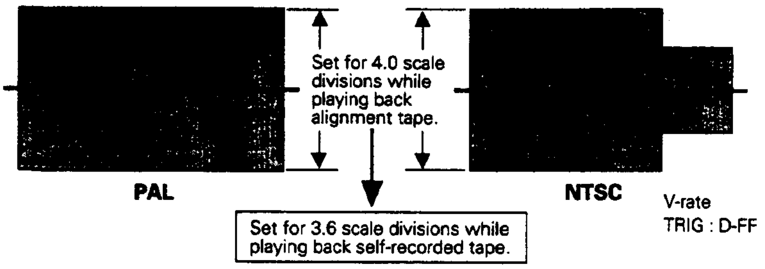

Upper marker
Lower marker

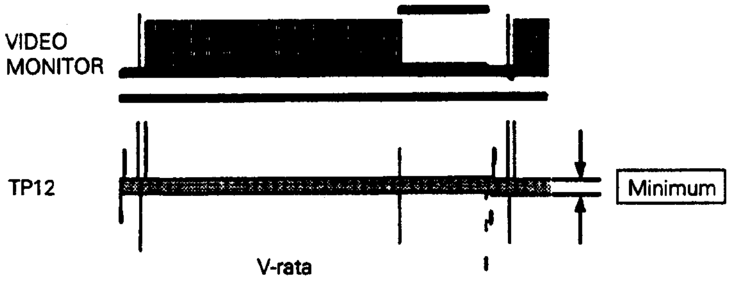
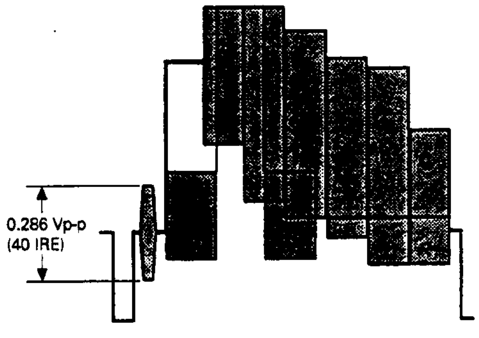
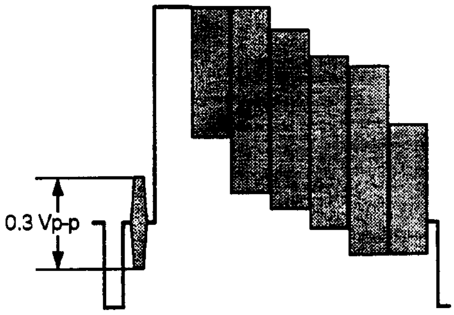
PAL

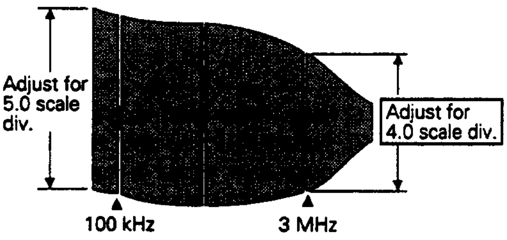
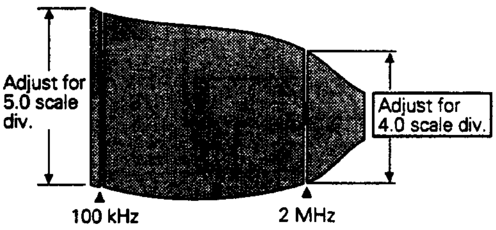
No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (Ⓣ) Adjustment level (☆)	Adjustment procedure
5	White and dark clip adjustment	• Oscilloscope (H-rate, 10:1) • Pulse and Bar (2T) signal **Note:** This adjustment cannot be performed with the test signal.	• VHS-SP • REC	◎ TP11: B-6I [VIDEO] Ⓣ N. W. CLIP (VR18: B-6J) [VIDEO] ☆ White clip: 3.6 scale div. (190 %)	1) Input the pulse and bar signal to the set and record it in the VHS SP mode. 2) Adjust the oscilloscope so that level difference between the sync tip and 100 white signal is equivalent to 4.0 scale divisions. 3) Adjust VR18 so that white clip is equivalent to 3.6 scale divisions (190 %).
			• S-VHS SP • REC	Ⓣ S. W. CLIP (VR17: B-6K) [VIDEO] Ⓣ S. D. CLIP (VR19: B-6K) [VIDEO] ☆ White clip: 4.4 scale div. (210 %) ☆ Dark clip: 2.8 scale div. (70 %)	4) Input the pulse and bar signal to the set and record it in the S-VHS SP mode. 5) Adjust the oscilloscope so that level difference between the sync tip and 100 % white signal is equivalent to 4.0 scale divisions. 6) Adjust VR17 so that white clip is equivalent to 4.4 scale divisions (210 %). 7) Adjust VR19 so that dark clip is equivalent to 2.8 scale divisions (70 %). 
			• VHS SP • REC	Ⓣ N. D. CLIP (VR20: B-6K) [VIDEO] ☆ Dark clip: 2.0 scale div. (50 %)	8) Input the pulse and bar signal to the set and record it in the VHS SP mode. 9) Adjust the oscilloscope so that level difference between the sync tip and 100 % white signal is equivalent to 4.0 scale divisions. 10) Adjust VR20 so that dark clip is equivalent to 2.0 scale divisions (50 %). 

No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (Ⓣ) Adjustment level (☆)	Adjustment procedure
6	S detection adjustment	• Oscilloscope (Probe 10: 1) • 4.5 MHz(NTSC)/ 4.8 MHz(PAL) single wave (100 mVp-p)	• PB	◎ TP22 : B-2B [VIDEO] Ⓣ S. DET (VR1: B-1A) [VIDEO] ☆ Duty ratio: 50 %	**Note:** This adjustment should not be performed generally but be done on only the occasion that an unavoidable reason such as replacement of the board needs it. 1) Make a shortcircuit between TP2 and TP3 on the VIDEO board. 2) Input a 4.5 MHz single wave (100 mVp-p) through TP1 on the VIDEO board. 3) Play a blank tape which nothing has been recorded on. 4) Adjust the VR so that the duty ratio of the rectangular wave is 50 % (A = B in figure) at the measuring point. 
	Reference: On the occasion that a signal generator for generating 4.5 MHz single wave is unavailable, the 4.5 MHz signal can be generated by a sweeper as shown below. However, this is just a simple and easy method with which adjustment won't exactly be carried out. Moreover, adjustment with this method may get the unit to malfunction. If adjustment is performed with this method, make sure to check the related items most carefully. 1) Turn the STOP knob of the sweep signal generator to the utmost LOW side. 2) Turn all markers off and set the BURST to off with the MODE switch. Moreover, turn off the SETUP/ SYNC switch. 3) Set the signal frequency to 0.22µsec (4.5MHz) on the oscilloscope with the START knob. 4) Set the signal amplitude to 100mVp-p with the LEVEL knob.				
7	REC FM level adjustment	• Oscilloscope (Prole, 10: 1) (Trigger: D. FF) • Color bars signal	<S-VHS> • S-VHS SP • REC	◎ TP7: B-7F [VIDEO] Ⓣ S REC FM LEV (VR5: B-8F) [VIDEO] ☆ 210 mVp-p	1) Input the color bars signal to the set and record it in the S-VHS SP mode. 2) Adjust the VR to obtain the specified level at the measuring point for the pedestal portion.
			<VHS> • VHS SP • REC	◎ TP7: B-7F [VIDEO] Ⓣ N REC FM LEV (VR6: B-8F) [VIDEO] ☆ 210 mVp-p (NTSC) ☆ 250 mVp-p (PAL)	1) Input the color bars signal to the set and record it in the VHS SP mode. 2) Adjust the VR to obtain the specified level at the measuring point for the pedestal portion.
		 **NTSC**			 **PAL**

No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (Ⓣ) Adjustment level (☆)	Adjustment procedure
8	VCXO adjustment	• Frequency counter • MHV-2H (NTSC) MHVE-2H(PAL) alignment tape	• PB	◎ TP21: B-10C [VIDEO] Ⓣ VCXO F (VC1: B-9B) [VIDEO] ☆ 3.579545 MHz ± 50 Hz (NTSC) ☆ 4.433619 MHz ± 50 Hz (PAL)	1) Make a shortcircuit between TP18 and GND on the VIDEO board. 2) Play the alignment tape while adjusting the TRACKING VR to maximize the FM waveform. 3) Adjust VC1 to obtain the specified frequency at the measuring point.
9	VCO adjustment	• Digital voltmeter • MHV-2H (NTSC) MHVE-2H (PAL) alignment tape	• PB	◎ TP20 : B-9B [VIDEO] Ⓣ VCO (VC2: B-7B) [VIDEO] ☆ 3.2 V DC	1) While playing the alignment tape, align the tracking exactly with it. 2) Adjust VC2 to obtain the specified voltage at the measuring point.
10	Pilot burst phase adjustment (PAL model only)	• Vectorscope • Color bars signal	• REC	◎ TP19 [VIDEO] Ⓣ P. BURST PHASE (VC3) [VIDEO] ☆ 270 ± 5°	**Note:** Perform this adjustment for PAL model only. 1) Short-circuit between TP18 and GND on the VIDEO board. 2) Input the color bars signal and record it. 3) While observing the color bars signal measured at TP19 on the vectorscope screen, adjust the phase of the pilot burst signal with VC3 so that it becomes 270°. 
11	Pilot burst level adjustment (PAL model only)	• Oscilloscope • Color bars signal	• REC	◎ TP19 [VIDEO] Ⓣ P. BURST PHASE LEV (VR30)[VIDEO] ☆ 110%	**Note:** Perform this adjustment for PAL model only. 1) Short-circuit between TP18 and GND on the VIDEO board. 2) Input the color bars signal and record it. 3) Adjust the level of the burst signal so that the burst signal level is 5.0 scale divisions on the oscilloscope screen. 4) Adjust VR30 so that the level of the pilot burst signal level becomes 5.5 scale divisions (110%) on the screen. 

No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (ⓣ) Adjustment level (☆)	Adjustment procedure
12	S-VHS REC color level adjustment  Set for 4.0 scale divisions while playing back alignment tape. PAL NTSC V-rate TRIG : D-FF Set for 5.0 scale divisions while playing back self-recorded tape.	• Oscilloscope (probe, 10 : 1) (Trigger: D. FF) • MHV-2H (NTSC) MHVE-2H (PAL) alignment tape • Color bars signal	• S-VHS SP • REC ↓ PB • PB • REC ↓ PB	◎ TP17 : B-3C [VIDEO] ⓣ S REC C LEV (VR25: B-3B) [VIDEO] ☆ +2 dB	1) Record the color bars signal and play it back. 2) Try to change the oscilloscope's slope between + and –, and confirm the channel having the higher signal level. 3) Play the alignment tape while adjusting the TRACKING VR to maximize the FM waveform. 4) While playing the alignment tape, adjust the oscilloscope so that the higher level of a channel confirmed in the preceding step 2) corresponds to 4 scale divisions on the oscilloscope screen. During this step, confirm that level difference between two channels is within 3 dB (2.8 to 5.7 scale divisions to 4.0 scale divisions). 5) Again record the color bars signal and play it back. 6) Adjust the VR so that the higher level of a channel corresponds to 5.0 scale divisions on the oscilloscope screen before recording [turning VR clockwise (↻) increases level]. During this adjustment, confirm that level difference between two channels is within 3 dB (3.5 scale divisions or more to 5.0 scale divisions).
13	VHS REC color level adjustment  Set for 4.0 scale divisions while playing back alignment tape. PAL NTSC V-rate TRIG : D-FF Set for 3.6 scale divisions while playing back self-recorded tape.	• Oscilloscope (Trigger: D. FF) • MHV-2 (NTSC) MHVE-2 (PAL) alignment tape • Color bars signal	• VHS-SP • REC ↓ PB • PB • REC ↓ PB	◎ TP17: B-3C [VIDEO] ⓣ VHS REC C LEV (VR24: B-3B) [VIDEO] ☆ –1 dB	1) Record the color bars signal and play it back. 2) Try to change the oscilloscope's slope between + and –, and confirm the channel having the higher signal level. 3) Play the alignment tape while adjusting the TRACKING VT to maximize the FM waveform. 4) While playing the alignment tape, adjust the oscilloscope so that the higher level of a channel confirmed in the preceding step 2) corresponds to 4 scale divisions on the oscilloscope screen. During this step, confirm that level difference between two channels is within 3 dB (2.8 to 5.7 scale divisions to 4.0 scale divisions). 5) Again record the color bars signal and play it back. 6) Adjust the VR so that the higher level of a channel corresponds to 3.6 scale divisions on the oscilloscope screen before recording [turning VR clockwise (↻) increases level]. During this adjustment, confirm that level difference between two channels is within 3 dB (2.5 scale divisions or more to 3.6 scale divisions).

No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (Ⓣ) Adjustment level (☆)	Adjustment procedure
14	Non-correlating pulse adjustment 	• Oscilloscope (V-rate, 10:1) • Color bars signal	• S-VHS SP • REC ↓ PB	◎ TP12: B-7I [VIDEO] Ⓣ CCD LEV (VR10: B-9F) [VIDEO] ☆ Level of correlating part: Minimum	1) Record the color bars signal and play it back. 2) Adjust the VR to minimize the correlating part in the level at the measuring point.
15	S-VHS PB Y level adjustment	• Oscilloscope (V-rate, 10:1) or WFM • Color bars signal	• S-VHS SP • REC ↓ PB	◎ VIDEO MONITOR terminal (with 75 Ω terminator) Ⓣ S PB Y LEV (VR22: B-5K) [VIDEO] <Color bars signal> ☆ 0.714 Vp-p [100 IRE] (NTSC) ☆ 0.7 Vp-p [100%] (PAL) <Test signal> ☆ 0.55 Vp-p Ⓣ SYNC LEV (VR4: B-3H) [VIDEO] ☆ 0.286 Vp-p [40 IRE] (NTSC) ☆ 0.3 Vp-p (PAL)	1) Record the color bars signal and play it back. 2) Adjust VR22 so that the white level of the color bars signal is equivalent to the specified level at the measuring point. 3) Adjust VR4 so that the sync level is equivalent to the specified level at the measuring point.
16	S-VHS PB burst level adjustment  **NTSC**	• Oscilloscope (H-rate, 10:1) or WFM • Color bars signal	• S-VHS SP • REC ↓ PB	◎ VIDEO MONITOR terminal (with 75 Ω terminator) Ⓣ PB C LEV (VR26: B-6C) [VIDEO] ☆ 0.286 Vp-p [40 IRE] (NTSC) ☆ 0.3 Vp-p (PAL)	1) Record the color bars signal and play it back. 2) Adjust VR26 so that the burst level is equivalent to the specified level at the measuring point.  **PAL**

No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts(Ⓣ) Adjustment level (☆)	Adjustment procedure
17	S-VHS REC/PB frequency response adjustment  Adjust for 5.0 scale div. Adjust for 4.0 scale div. 100 kHz 3 MHz	• Oscilloscope (V-rate, 10 : 1) (Trigger: D.FF) • Mono-sweep signal	• S-VHS SP • REC ↓ PB	◎ VIDEO MONITOR terminal (with 75 Ω terminator) <CH-1> Ⓣ S EQ1 (VR8: B-4E) [VIDEO] <CH-2> Ⓣ S EQ2 (VR9: B-4E) [VIDEO] ☆ 3 MHz signal: –2.0 dB (Criterion: 100 kHz signal level)	1) Record the mono-sweep signal and play it back. 2) Adjust the oscilloscope so that the 100 kHz level of the mono-sweep signal on CH-1 corresponds to 5 scale divisions on the oscilloscope screen. 3) Adjust VR8 so that the 3 MHz level of the mono-sweep signal on CH-1 corresponds to 4 scale divisions (–2.0 dB) on the oscilloscope screen. 4) Repeat the same steps as 2) and 3) above for CH-2. **Note:** This adjustment cannot be performed with the test signal.
18	VHS PB Y level adjustment	• Oscilloscope (H-rate, 10:1) or WFM • Color bars signal	• VHS-SP • REC ↓ PB	◎ VIDEO MONITOR terminal (with 75 Ω terminator) Ⓣ N PB Y LEV (VR23: B-5K) [VIDEO] <Color bars signal> ☆ 0.714 Vp-p [100 IRE] (NTSC) ☆ 0.7 Vp-p [100%] (PAL) <Test signal> ☆ 0.55 Vp-p	**Note:** It is the prerequisite to do the following adjustment that the previous step No. 15 "S-VHS PB Y level adjustment" has been completed. 1) Record the color bars signal and play it back. 2) Adjust VR23 so that the white level of the color bars signal is equivalent to the specified level at the measuring point.
19	VHS REC/PB frequency response adjustment  Adjust for 5.0 scale div. Adjust for 4.0 scale div. 100 kHz 2 MHz	• Oscilloscope (V-rate, 10 : 1) (Trigger: D.FF) • Mono-sweep signal	• VHS-SP • REC ↓ PB	◎ VIDEO MONITOR terminal (with 75 Ω terminator) Ⓣ N EQ (VR7: B-5F) [VIDEO] ☆ 2 MHz signal: –2.0 dB (Criterion: 100 kHz signal level)	1) Record the mono-sweep signal and play it back. 2) Adjust the oscilloscope so that the 100 kHz level of the mono-sweep signal on a channel corresponds to 5 scale divisions on the oscilloscope screen. Note: This adjustment shall be performed for a channel whose signal level is higher than the other. 3) Adjust VR7 so that the 2 MHz level of the mono-sweep signal on a channel corresponds to 4 scale divisions (–2.0 dB) on the oscilloscope screen. **Note:** This adjustment cannot be performed with the test signal.

3.11 CHECKING OF LENS

3.11.1 IRIS MANUAL OPERATION

(1) Hold the lens in one hand , and turn the IRIS RING with the other hand to check the feel for smooth operation. (Operating range F 1.4 to Close)

3.11.2 ZOOM MANUAL OPERATION

(1) Set the zoom mode knob to M. HOLD the lens in one hand, turn the ZOOM RING with the other hand to check the feel for smooth operation from 5.5mm to 77mm or 77mm to 5.5mm.
(2) Zoom mode knob operation and ZOOM RING operation must be smooth.

3.11.3 FOCUS OPERATION

Hold the lens in one hand, turn the FOCUS RING with the other hand to check the feel for smooth operation from infinite to 1m or from 1m to infinite.

3.11.4 IRIS MODE SWITCH

(1) Turn on the power switch.
(2) Ensure the iris working automatically in the 'A' (Automatic) mode.
(3) Turn the IRIS MODE switch to M (Manual). Check the feel for smooth operation of the iris ring.

3.11.5 IRIS MOMENTARY AUTO SWITCH

(1) Turn the iris mode switch to 'M' (Manual).
(2) Check that the iris is automatically controlled while the momentary auto switch is depressed.

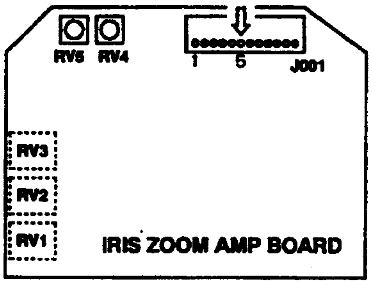
3.12 ADJUSTMENT OF ZOOM LENS

3.12.1 Adjustment of iris potentiometer

If the gearing of the iris motor is once removed from the lens body, the following adjustment must be performed after the gearing is reassembled to the lens body. In such an event, proceed to the adjustment in order of "3.12.2 Adjustment of limit switch position" first and then "3.12.4 Adjustment of iris setting position".

For input of the IRIS CLOSE signal and IRIS OPEN signal that are used for the adjustment to the drive unit, follow the instructions mentioned below.

1. IRIS CLOSE signal
   Input 0.5 V power to the pin 5 of the connector J001.
2. IRIS OPEN signal
   - Input 9 V power to the pin 5 of the connector J001.
   - Or, connect the connector J001 with CN9 of the PR2 board and attach the lens the to the camera. Then, close the lens with the lens cap to open the lens iris.



– Side B –

Fig. 3-12-1

3.12.2 Adjustment of limit switch position

If the occasion arises, the position of the limit switch inside of the iris potentiometer can be adjusted in the following way.

1. Set the IRIS MODE selector switch of the lens to "A" (auto) position.
2. Turn RV2 and RV3 on the IRIS ZOOM AMP board clockwise to the extent.
3. Among three screws fixing the drive unit to the lens body, remove one fixing the drive unit from the bottom and loosen the other two screws fixing the drive unit from the top.
4. Slightly raise the drive unit by the bottom so as to ungear it and the iris ring of the lens body from each other and to loosen the connection between the two.
5. Input the IRIS CLOSE signal through the connector J001, and the iris motor stops at the CLOSE side.
6. Turn the iris ring to align the midpoint between the CLOSE end and the marking "C" of the iris ring with the reference line of the lens body.
7. While checking sound gear engagement between the drive unit and the iris ring, screw the drive unit to the lens body with a screw that was once removed from the top and tighten the three screws all.

8. Turn the iris ring by hand while checking that the iris ring is free to turn in the standing-still range between the CLOSE END and the MECHANICAL END.

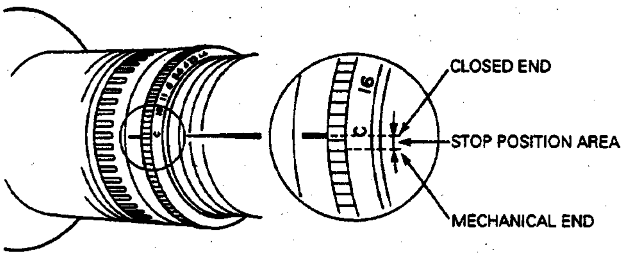


Fig. 3-12-2

9. Input the IRIS OPEN signal through the connector J001, and the iris turns to the OPEN side until it stops in the standing-still range to the OPEN side.
10. Turn the iris ring by hand while checking that the iris ring is free to turn between the OPEN END and the MECHANICAL END.
    If there is no play left for turning of the iris ring in either of the steps 8 and 10, repeat the steps 5 through 10 until a satisfactory result is obtained.

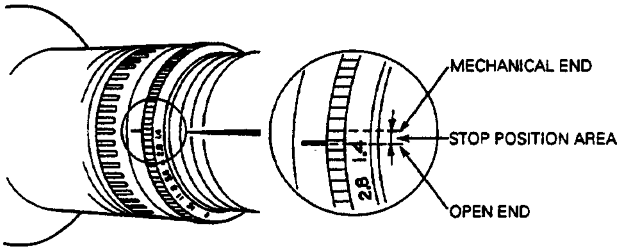


Fig. 3-12-3

3.12.3 Adjustment of iris sensitivity

When the zoom lens is attached to a different camera, hunting occasionally occurs during iris operation. In such a case, remove hunting by adjusting the iris sensitivity in the following manner.
Turning RV1 on the IRIS ZOOM AMP board clockwise raises the iris sensitivity while turning it counterclockwise lowers the sensitivity.

3.12.4 Adjustment of iris setting position

This adjustment makes the iris ring of the lens exactly operate corresponding to IRIS OUTPUT signal coming from the camera.

1. Turn both RV2 and RV3 on the IRIS ZOOM AMP board counterclockwise to the extent.
2. Input 6.2 V power to the pin 6 of the connector J001.
3. Turn RV2 clockwise so that the index on the lens body corresponds to the marking "2.8" on the iris ring.

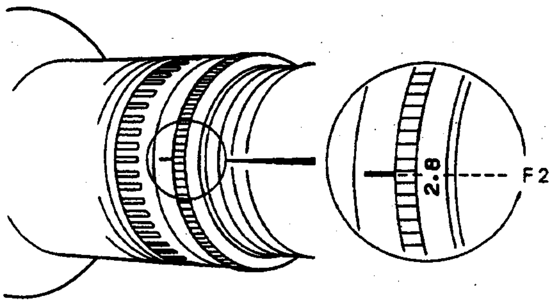


Fig. 3-12-4

4. Input 3.4 V power to the pin 6 of the connector J001.
5. Turn RV3 clockwise so that the index on the lens body corresponds to the marking "16" on the iris ring.

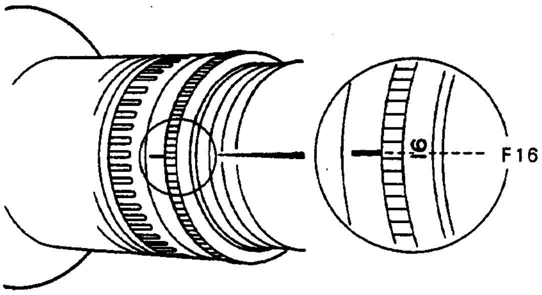


Fig. 3-12-5

6. Repeat the above steps 2 through 5 two or three times to secure the adjustment.

3.12.5 Adjustment of iris operation speed

Input the IRIS OPEN signal and IRIS CLOSE signal through the camera connection cable alternately while adjusting the iris operation speed.
Turning RV4 on the IRIS ZOOM AMP board clockwise speeds up iris operation while turning RV4 counterclockwise slows it down.

3.12.6 Adjustment of zooming-in/out speed

Maximum zooming-in/out speed in the zoom servo operation can be adjusted as mentioned below.
Turning RV5 on the IRIS ZOOM AMP board clockwise speeds up zooming-in/out operation while turning RV5 counterclockwise slows it down.

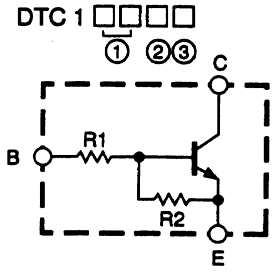
SECTION 4
CHARTS AND DIAGRAMS

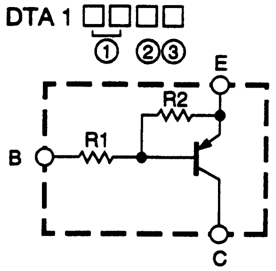
■ SCHEMATIC DIAGRAM NOTES

- **Schematic safety precaution**
  ⚠ Parts are safety related parts.
  When replacing them, be sure to use the specified parts.
- **Voltage and waveform measurements.**
  Voltage : 1) CAMERA section
  Measured with digital voltmeter in DC range; iris closed.
  2) VTR section
  Measured with digital voltmeter in the S-VHS mode.
  Value in ( ) is voltage measured in the S-VHS playback (PB) mode, and it is different from that in the recording.
  Waveform : Grey scale illuminated at more than 4000 lux at 3200 K lighting. (PR1, PR2, CC board)
  Video signal is measured by supplying the internal test signal (VIDEO board REC mode) and the EIA color bars signal (VIDEO board PB mode).
- **Signal flow on the diagram**
  The following arrow marks indicate the specified signal parts respectively.

  ➡ : RECORDING or E-E SIGNAL PATH
  ⇨ : PLAYBACK SIGNAL PATH
  ➩ : REC/PLAY SIGNAL PATH

- **Terminal logic**
  Top bar of terminal name show input or output logic.
  Top bar shows, the control circuit become active at negative (low) logic input for example.
- **Digital transistors**



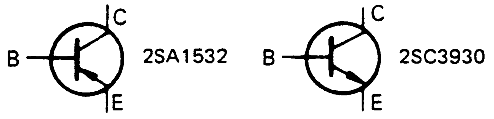


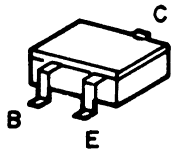
① Number in these two places expresses the ohmage of R1 in abbreviation.
43 : 4.7kΩ
14 : 10 kΩ
24 : 22 kΩ
44 : 47 kΩ

② Roman letter in the place expresses the resistive ratio between R1 and R2 in abbreviation.
E : R2/R1 = 1/1
Y : R2/R1 = 5/1
W : R2/R1 = 2/1
X : R2/R1 = 1/2
T : R2 is opened.

③ Symbol in this place expresses the shape of resistor in abbreviation.

- Transistors and F.E.T.s are:



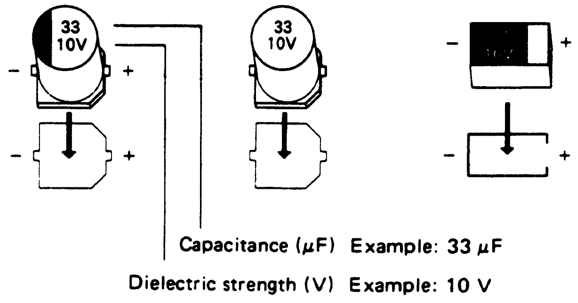


- Definition of the (A) and the (B) or circuit boards diagrams
  (A) : Side on which discrete parts are assembled
  (B) : Side on which only chip parts are assembled.

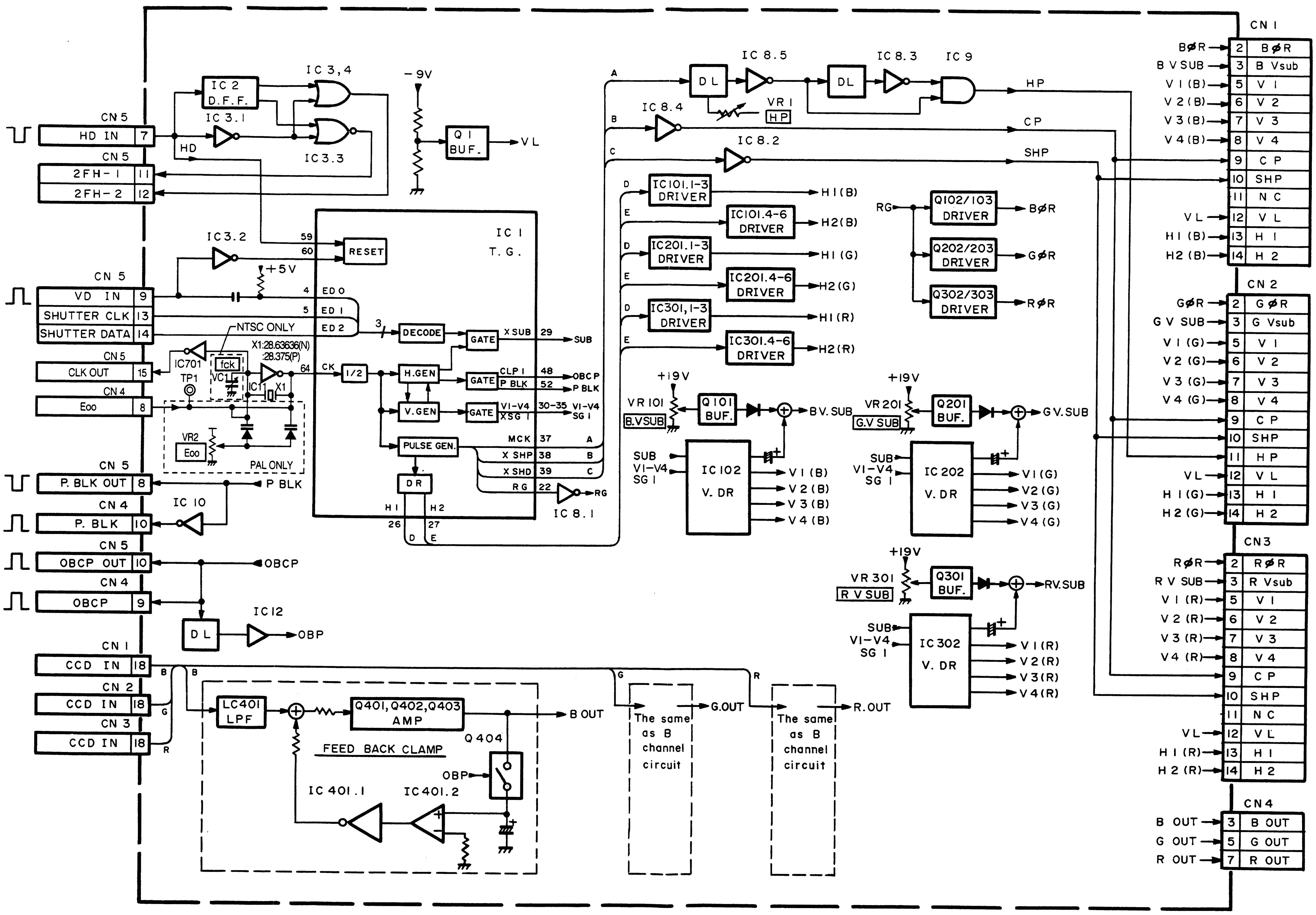
■ REPLACING SUBMINIATURE "CHIP" PARTS

- Some resistors, shorting jumpers (0 Ω resistance), ceramic capacitors, transistors, and diodes are chip parts. These chip parts cannot be reused after they are once removed.
- Chip resistors used in some circuits are of high precision type having little error in resistance.
  To demonstrate the full capacity of this camera head, place an order for proper parts referring to the diagrams and parts lists in the sections 5.
- Soldering cautions:
  1) Do not apply heat for more than 3 seconds.
  2) Avoid using a rubbing stroke when soldering.
  3) Discard removed chips; do not reuse them.
  4) Supplementary cementing is not required.
  5) Use care not to scratch or otherwise damage the chips.
- Polarities of chip electrolytic capacitors and chip tanntalum capacitors used in this model are as illustrated below.
  Polarties indicated by silk-screen printing on circuit boards are also shown below. When replacing such parts, make sure of polarities.

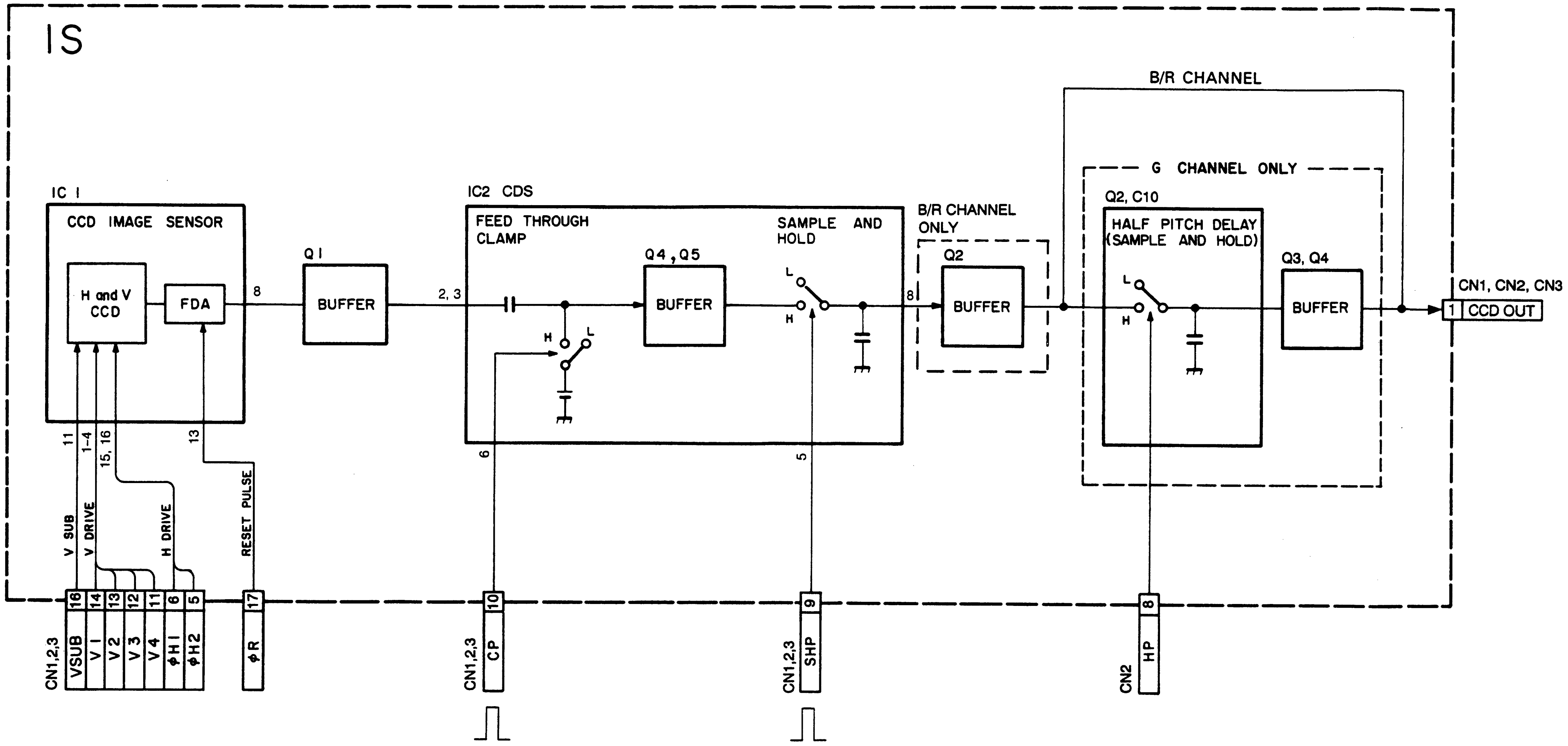
- Electrolytic capacitor
- Non-polarized electrolytic capacitor
- Tantalum capacitor


33
10V
-
+
33
10V
-
+
-
+
-
+
Capacitance (μF) Example: 33 μF
Dielectric strength (V) Example: 10 V

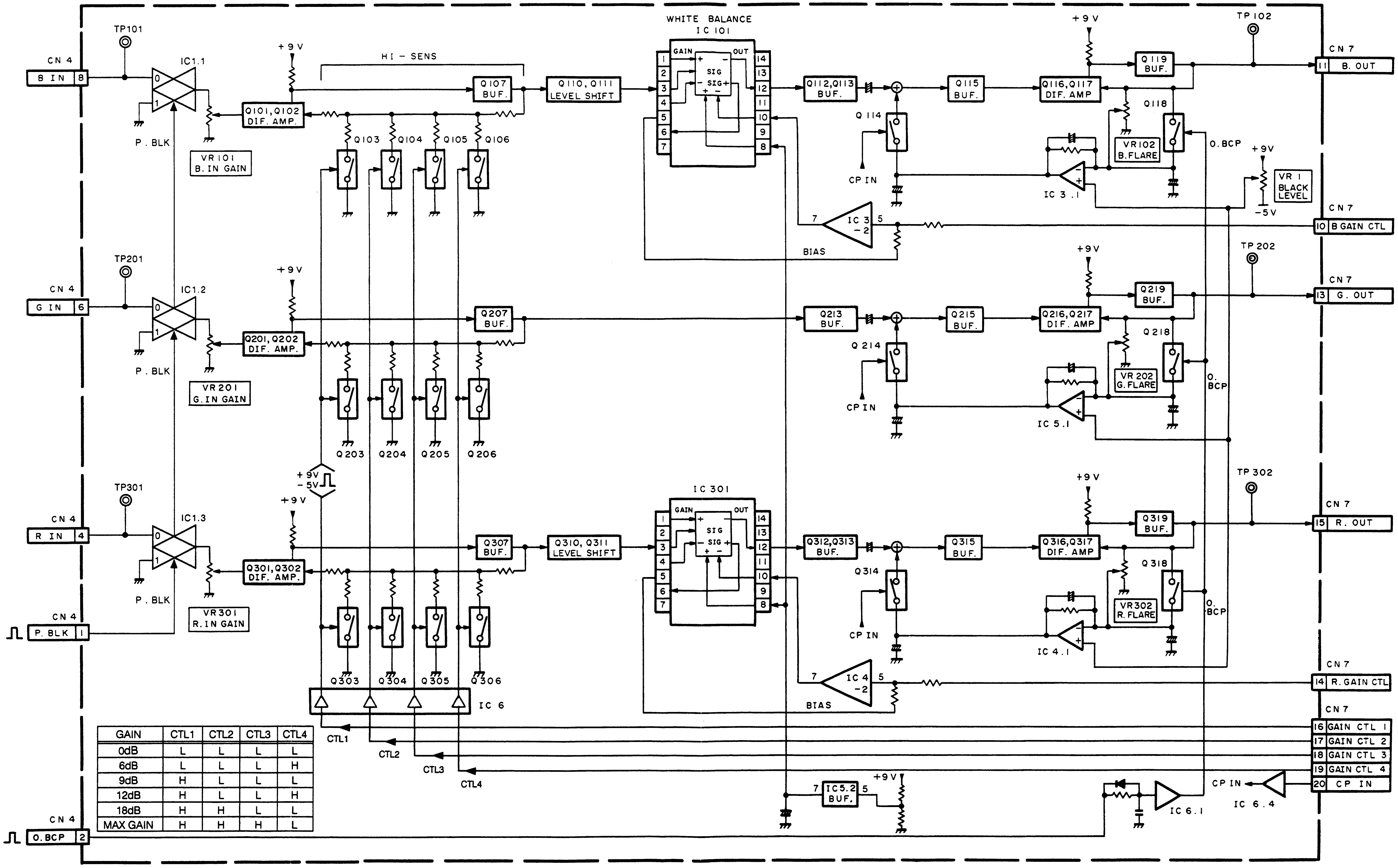
4.1 DR BOARD BLOCK DIAGRAM


CN5
HD IN 7
2FH-1 11
2FH-2 12
HD
IC2 D.F.F.
IC3.1
IC3,4
IC3.3
-9V
Q1 BUF.
VL
CN 5
VD IN 9
SHUTTER CLK 13
SHUTTER DATA 14
IC3.2
+5V
59
60
RESET
IC1 T.G.
4 ED0
5 ED1
ED2
3
DECODE
GATE
XSUB 29
SUB
NTSC ONLY
X1:28.63636(N) :28.375(P)
CN5
CLK OUT 15
IC701
fck
VC1
IC11
X1
TP1
64 CK
1/2
H.GEN
CLP1 48
OBCP
P BLK 52
P BLK
CN4
Eoo 8
V.GEN
GATE
V1-V4 30-35
XSG 1
V1-V4
SG1
VR2
Eoo
PAL ONLY
PULSE GEN.
MCK 37 A
X SHP 38 B
X SHD 39 C
RG 22
RG
IC8.1
DR
H1 26
H2 27
D
E
CN 5
P. BLK OUT 8
P BLK
CN 4
P. BLK 10
IC10
CN 5
OBCP OUT 10
OBCP
CN 4
OBCP 9
DL
IC12
OBP
CN 1
CCD IN 18
CN 2
CCD IN 18
CN 3
CCD IN 18
B
G
R
LC401 LPF
Q401,Q402,Q403 AMP
B OUT
Q404
FEED BACK CLAMP
OBP
IC401.1
IC401.2
The same as B channel circuit
G.OUT
The same as B channel circuit
R.OUT
A
B
C
IC8.5
DL
VR1 HP
IC8.3
DL
IC9
HP
IC8.4
CP
IC8.2
SHP
D
IC101.1-3 DRIVER
H1(B)
E
IC101.4-6 DRIVER
H2(B)
D
IC201.1-3 DRIVER
H1(G)
E
IC201.4-6 DRIVER
H2(G)
D
IC301,1-3 DRIVER
H1(R)
E
IC301.4-6 DRIVER
H2(R)
RG
Q102/103 DRIVER
BøR
Q202/203 DRIVER
GøR
Q302/303 DRIVER
RøR
+19V
VR101
B.VSUB
Q101 BUF.
BV.SUB
SUB
V1-V4
SG1
IC102 V.DR
V1(B)
V2(B)
V3(B)
V4(B)
+19V
VR201
G.V SUB
Q201 BUF.
GV.SUB
SUB
V1-V4
SG1
IC202 V.DR
V1(G)
V2(G)
V3(G)
V4(G)
+19V
VR301
R V SUB
Q301 BUF.
RV.SUB
SUB
V1-V4
SG1
IC302 V.DR
V1(R)
V2(R)
V3(R)
V4(R)
CN1
BøR 2 BøR
B VSUB 3 B Vsub
V1(B) 5 V1
V2(B) 6 V2
V3(B) 7 V3
V4(B) 8 V4
9 CP
10 SHP
11 NC
VL 12 VL
H1(B) 13 H1
H2(B) 14 H2
CN2
GøR 2 GøR
G V SUB 3 G Vsub
V1(G) 5 V1
V2(G) 6 V2
V3(G) 7 V3
V4(G) 8 V4
9 CP
10 SHP
11 HP
VL 12 VL
H1(G) 13 H1
H2(G) 14 H2
CN3
RøR 2 RøR
R V SUB 3 R Vsub
V1(R) 5 V1
V2(R) 6 V2
V3(R) 7 V3
V4(R) 8 V4
9 CP
10 SHP
11 NC
VL 12 VL
H1(R) 13 H1
H2(R) 14 H2
CN4
B OUT 3 B OUT
G OUT 5 G OUT
R OUT 7 R OUT

4.2 IS (B,G,R) BOARD BLOCK DIAGRAM

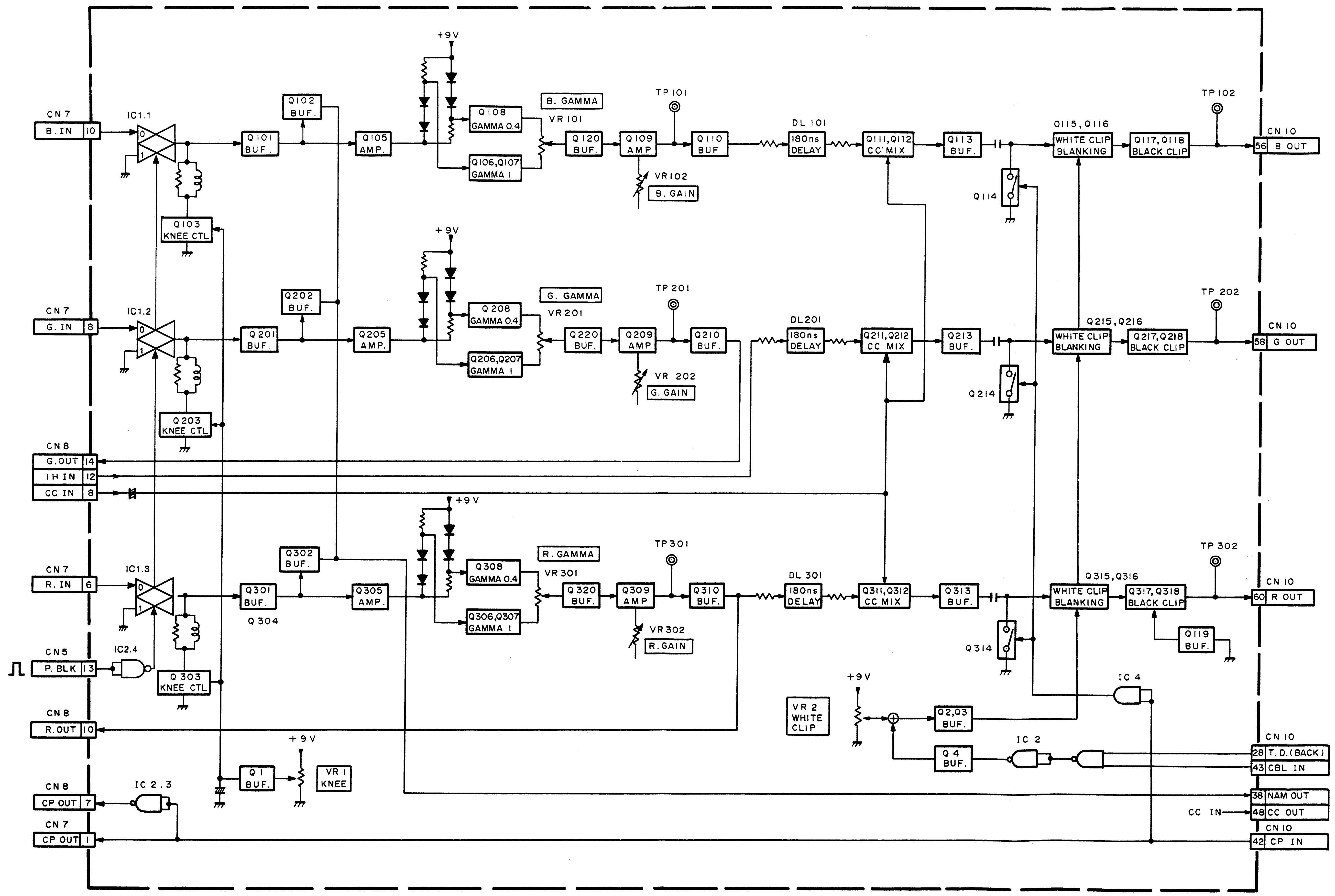

IS
IC 1
CCD IMAGE SENSOR
H and V CCD
FDA
8
Q1
BUFFER
2, 3
IC2 CDS
FEED THROUGH CLAMP
Q4, Q5
BUFFER
SAMPLE AND HOLD
H
L
8
B/R CHANNEL ONLY
Q2
BUFFER
B/R CHANNEL
G CHANNEL ONLY
Q2, C10
HALF PITCH DELAY (SAMPLE AND HOLD)
Q3, Q4
BUFFER
CN1, CN2, CN3
1 CCD OUT
11
1-4
15, 16
13
6
5
V SUB
V DRIVE
H DRIVE
RESET PULSE
16 14 13 12 11 6 5
17
10
9
8
CN1,2,3
VSUB
V1
V2
V3
V4
φH1
φH2
φR
CN1,2,3
CP
CN1,2,3
SHP
CN2
HP

4.3 PR1 BOARD BLOCK DIAGRAM


TP101
CN 4
B IN 8
IC1.1
P. BLK
VR101
B. IN GAIN
+9V
HI - SENS
Q107
BUF.
Q101, Q102
DIF. AMP.
Q103
Q104
Q105
Q106
Q110, Q111
LEVEL SHIFT
WHITE BALANCE
IC 101
GAIN
OUT
SIG
SIG
Q112, Q113
BUF.
Q114
CP IN
Q115
BUF.
Q116, Q117
DIF. AMP
Q118
Q119
BUF.
VR102
B. FLARE
IC 3.1
O. BCP
VR 1
BLACK LEVEL
-5V
TP 102
CN 7
11 B. OUT
IC 3-2
BIAS
10 B GAIN CTL
TP201
CN 4
G IN 6
IC1.2
P. BLK
VR201
G. IN GAIN
Q207
BUF.
Q201, Q202
DIF. AMP.
Q203
Q204
Q205
Q206
Q213
BUF.
Q214
CP IN
Q215
BUF.
Q216, Q217
DIF. AMP
Q218
Q219
BUF.
VR 202
G. FLARE
IC 5.1
O. BCP
TP 202
CN 7
13 G. OUT
+9V -5V
TP301
CN 4
R IN 4
IC1.3
P. BLK
VR301
R. IN GAIN
Q307
BUF.
Q301, Q302
DIF. AMP.
Q310, Q311
LEVEL SHIFT
IC 301
Q303
Q304
Q305
Q306
Q312, Q313
BUF.
Q314
CP IN
Q315
BUF.
Q316, Q317
DIF. AMP
Q318
Q319
BUF.
VR302
R. FLARE
IC 4.1
O. BCP
TP 302
CN 7
15 R. OUT
IC 4-2
BIAS
14 R. GAIN CTL
CN 4
P. BLK 1
IC 6
CTL1
CTL2
CTL3
CTL4
16 GAIN CTL 1
17 GAIN CTL 2
18 GAIN CTL 3
19 GAIN CTL 4
20 CP IN
CP IN
IC 6.4
IC 6.1
IC5.2
BUF.
CN 4
O. BCP 2

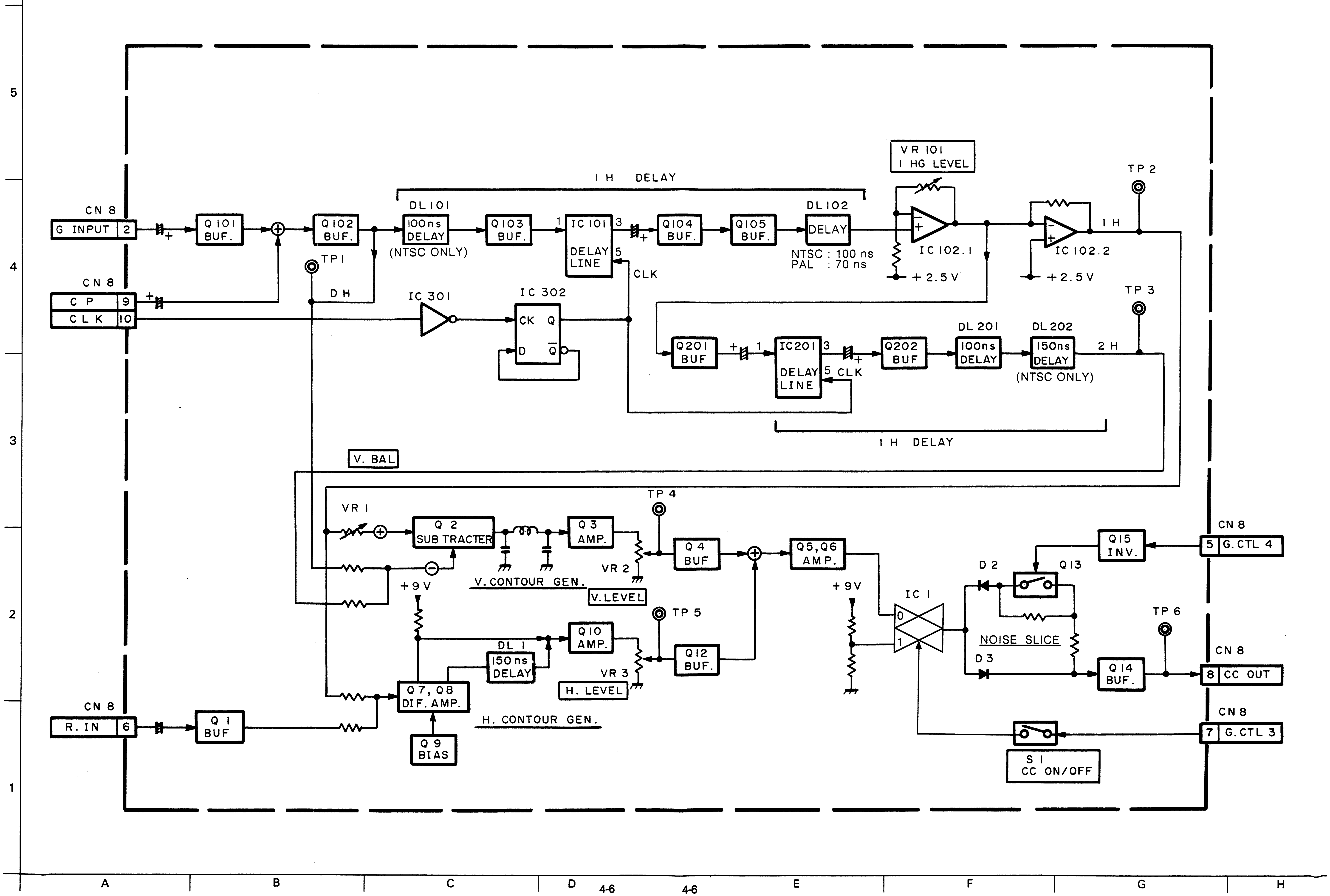
GAIN	CTL1	CTL2	CTL3	CTL4
0dB	L	L	L	L
6dB	L	L	L	H
9dB	H	L	L	L
12dB	H	L	L	H
18dB	H	H	L	L
MAX GAIN	H	H	H	L

4.4 PR2 BOARD BLOCK DIAGRAM

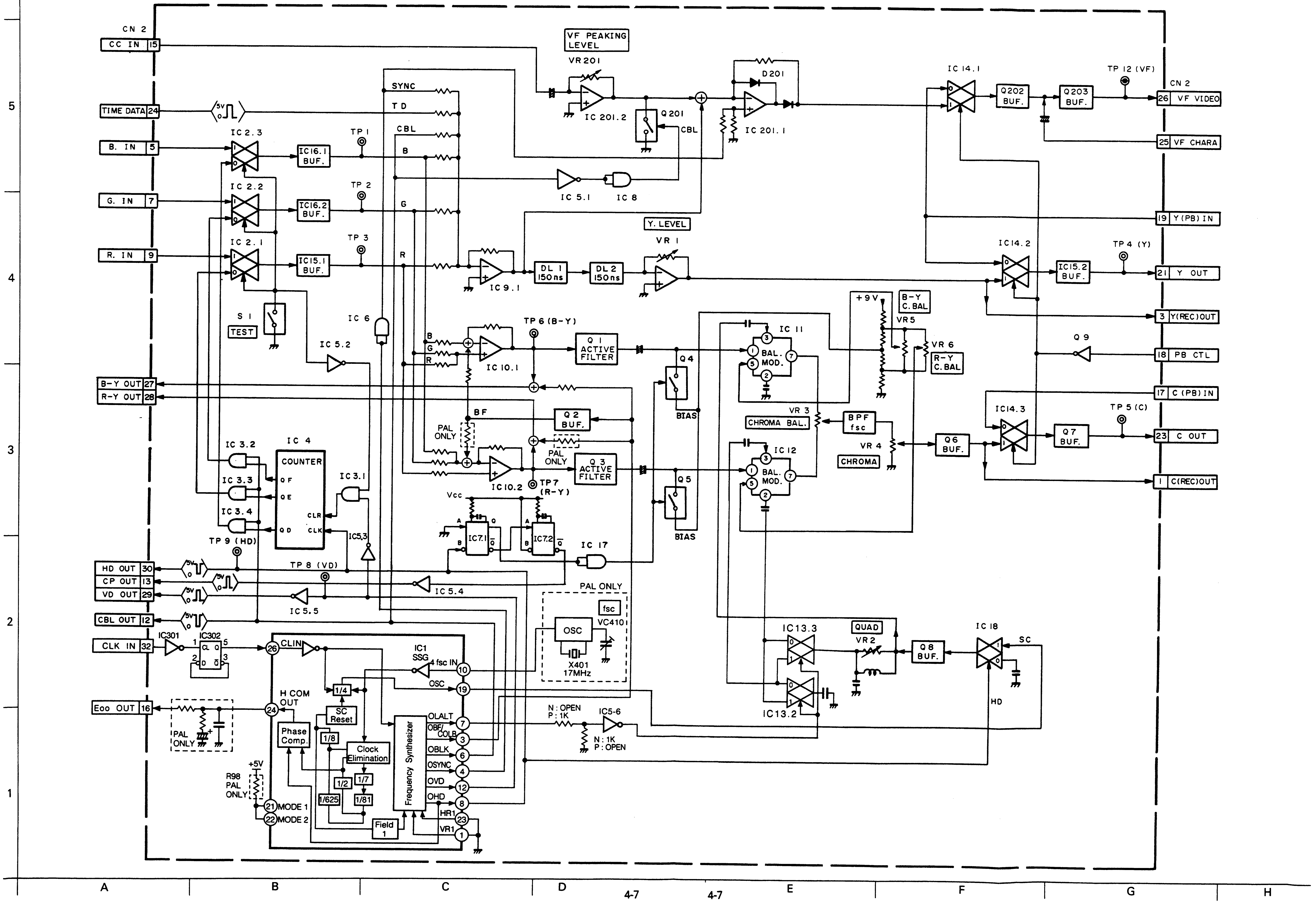

CN 7
B. IN 10
IC1.1
Q102 BUF.
Q101 BUF.
Q103 KNEE CTL
Q105 AMP.
+9V
Q108 GAMMA 0.4
Q106,Q107 GAMMA 1
B. GAMMA
VR 101
Q120 BUF.
Q109 AMP
VR102
B. GAIN
TP101
Q110 BUF
DL 101
180ns DELAY
Q111,Q112 CC MIX
Q113 BUF.
Q114
Q115,Q116
WHITE CLIP BLANKING
Q117,Q118 BLACK CLIP
TP 102
CN 10
56 B OUT
CN 7
G. IN 8
IC1.2
Q202 BUF.
Q201 BUF.
Q203 KNEE CTL
Q205 AMP.
+9V
Q208 GAMMA 0.4
Q206,Q207 GAMMA 1
G. GAMMA
VR201
Q220 BUF.
Q209 AMP
VR 202
G. GAIN
TP 201
Q210 BUF.
DL201
180ns DELAY
Q211,Q212 CC MIX
Q213 BUF.
Q214
Q215,Q216
WHITE CLIP BLANKING
Q217,Q218 BLACK CLIP
TP 202
CN 10
58 G OUT
CN 8
G. OUT 14
1H IN 12
CC IN 8
CN 7
R. IN 6
IC1.3
Q302 BUF.
Q301 BUF.
Q 304
Q 303 KNEE CTL
Q305 AMP.
+9V
Q308 GAMMA 0.4
Q306,Q307 GAMMA 1
R. GAMMA
VR 301
Q320 BUF.
Q309 AMP
VR302
R. GAIN
TP301
Q310 BUF.
DL 301
180ns DELAY
Q311,Q312 CC MIX
Q313 BUF.
Q314
Q315,Q316
WHITE CLIP BLANKING
Q317,Q318 BLACK CLIP
Q119 BUF.
TP 302
CN 10
60 R OUT
CN 5
P. BLK 13
IC2.4
CN 8
R. OUT 10
Q1 BUF.
+9V
VR 1 KNEE
VR 2 WHITE CLIP
+9V
Q2,Q3 BUF.
Q 4 BUF.
IC 4
IC 2
CN 10
28 T. D. (BACK)
43 CBL IN
38 NAM OUT
CC IN
48 CC OUT
CN 10
42 CP IN
CN 8
CP OUT 7
IC 2.3
CN 7
CP OUT 1
0
1
6
5
4
3
2
1
A
B
C
D
E
F
G
H

6

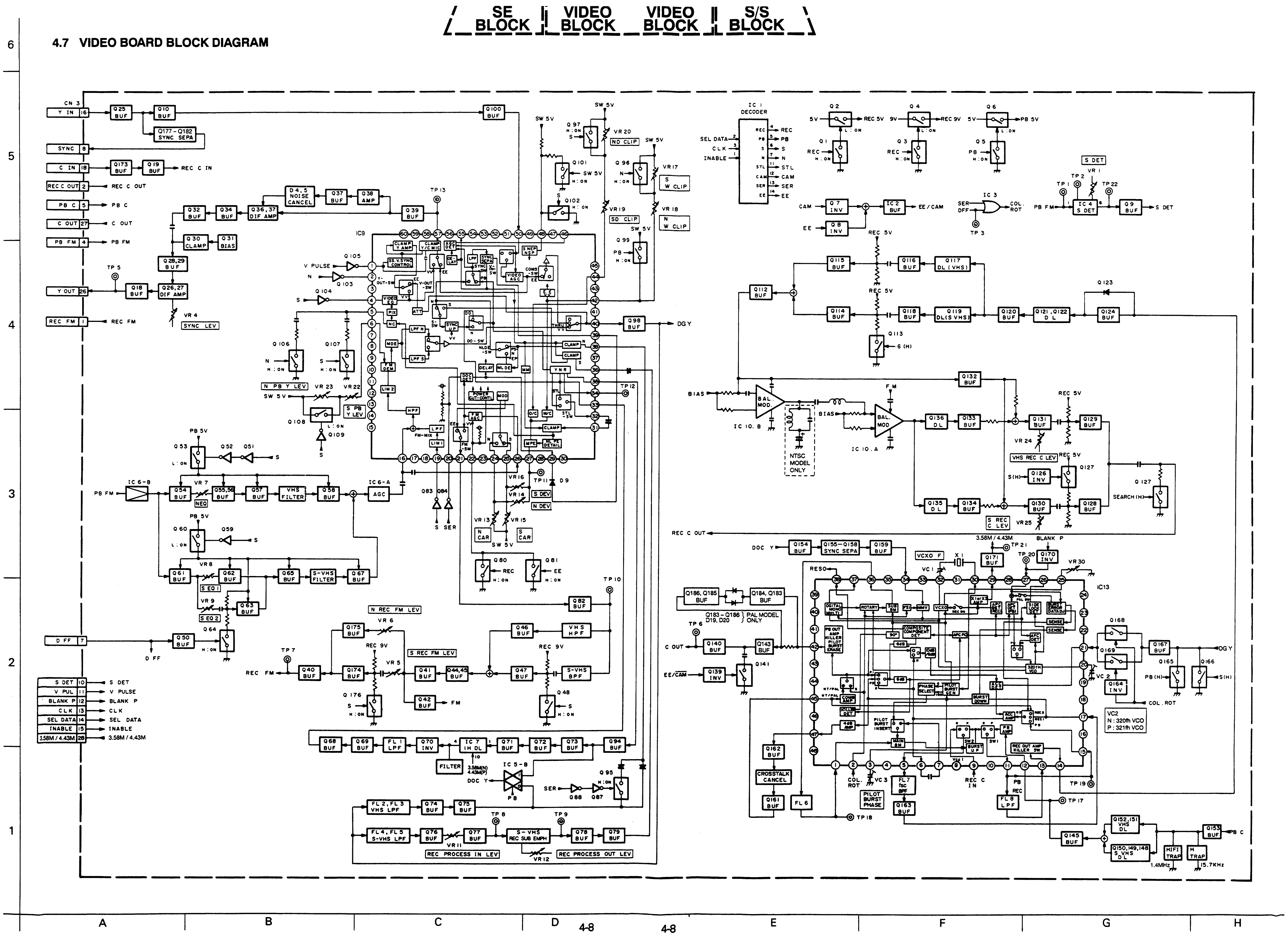
4.5 CC BOARD BLOCK DIAGRAM


5
4
3
2
1
CN 8
G INPUT 2
Q101 BUF.
Q102 BUF.
TP1
DH
CN 8
CP 9
CLK 10
1H DELAY
DL101
100ns DELAY
(NTSC ONLY)
Q103 BUF.
IC101 DELAY LINE
1
3
5
CLK
Q104 BUF.
Q105 BUF.
DL102
DELAY
NTSC : 100 ns
PAL : 70 ns
VR101
1 HG LEVEL
IC102.1
+2.5V
IC102.2
+2.5V
1H
TP2
TP3
IC301
IC302
CK Q
D Q̄
Q201 BUF
IC201 DELAY LINE
1
3
5 CLK
Q202 BUF
DL201
100ns DELAY
DL202
150ns DELAY
(NTSC ONLY)
2H
1H DELAY
V. BAL
VR1
Q2 SUB TRACTER
Q3 AMP.
TP4
VR2
Q4 BUF
Q5,Q6 AMP.
V. CONTOUR GEN.
V. LEVEL
+9V
Q10 AMP.
DL1
150ns DELAY
TP5
VR3
H. LEVEL
Q12 BUF.
Q7, Q8 DIF. AMP.
H. CONTOUR GEN.
Q9 BIAS
CN 8
R. IN 6
Q1 BUF
+9V
IC1
0
1
CN 8
5 G. CTL 4
Q15 INV.
D2
Q13
NOISE SLICE
D3
Q14 BUF.
TP6
CN 8
8 CC OUT
CN 8
7 G. CTL 3
S1
CC ON/OFF
A
B
C
D
E
F
G
H

4.6 SE BOARD BLOCK DIAGRAM

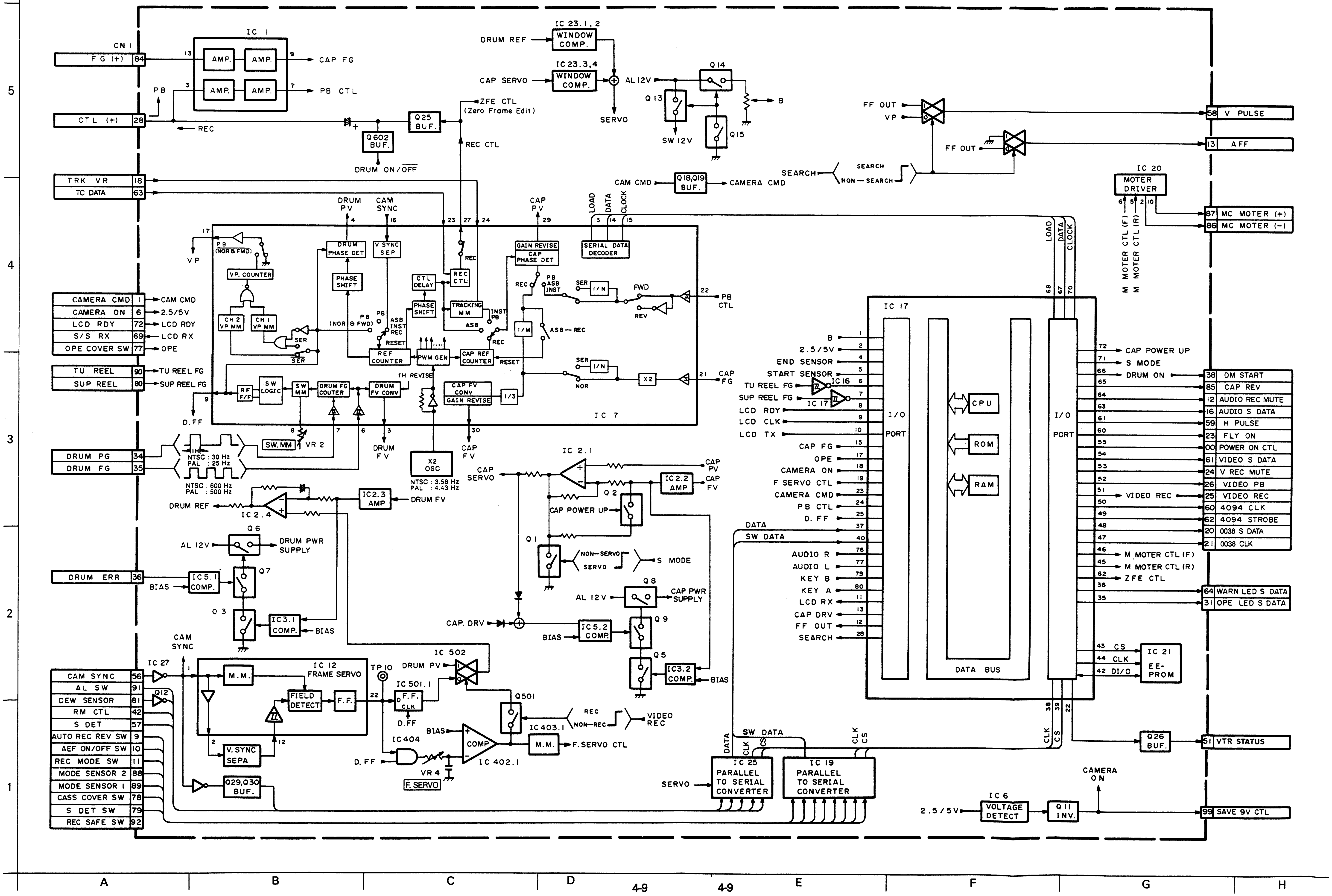

CN 2
CC IN 15
TIME DATA 24
B. IN 5
G. IN 7
R. IN 9
B-Y OUT 27
R-Y OUT 28
HD OUT 30
CP OUT 13
VD OUT 29
CBL OUT 12
CLK IN 32
Eoo OUT 16
IC 2.3
IC 2.2
IC 2.1
IC16.1 BUF.
IC16.2 BUF.
IC15.1 BUF.
TP 1
TP 2
TP 3
S 1
TEST
IC 6
IC 5.2
SYNC
T D
CBL
B
G
R
VF PEAKING LEVEL
VR201
IC 201.2
Q 201
CBL
D201
IC 201.1
IC 5.1
IC 8
Y. LEVEL
VR 1
IC 9.1
DL 1 150ns
DL 2 150ns
TP 6 (B-Y)
IC 10.1
Q 1 ACTIVE FILTER
Q 4
BIAS
IC 11
BAL. MOD.
+9V
B-Y C. BAL
VR5
VR 6
R-Y C. BAL
VR 3
CHROMA BAL.
BPF fsc
VR 4
CHROMA
BF
PAL ONLY
Q 2 BUF.
PAL ONLY
Q 3 ACTIVE FILTER
IC 10.2
TP7 (R-Y)
Q 5
BIAS
IC 12
BAL. MOD.
IC 4
COUNTER
O F
Q E
Q D
CLR
CLK
IC 3.2
IC 3.3
IC 3.4
IC 3.1
IC5.3
TP 9 (HD)
TP 8 (VD)
Vcc
IC7.1
IC7.2
A
B
Q
IC 17
IC 5.4
IC 5.5
PAL ONLY
fsc
VC410
OSC
X401 17MHz
IC301
IC302
CL
D
26 CLIN
IC1 SSG
4 fsc IN 10
OSC 19
1/4
SC Reset
H COM OUT 24
Phase Comp.
1/8
Clock Elimination
1/2
1/7
1/625
1/81
Frequency Synthesizer
Field 1
OLALT 7
OBF/ COLB 3
OBLK 6
OSYNC 4
OVD 12
OHD 8
HR1 23
VR1 1
+5V
R98 PAL ONLY
21 MODE 1
22 MODE 2
PAL ONLY
N : OPEN P : 1K
IC5-6
N : 1K P : OPEN
IC 14.1
Q202 BUF.
Q203 BUF.
TP 12 (VF)
26 VF VIDEO
25 VF CHARA
19 Y (PB) IN
IC14.2
IC15.2 BUF.
TP 4 (Y)
21 Y OUT
3 Y(REC)OUT
Q 9
18 PB CTL
17 C (PB) IN
IC14.3
Q6 BUF.
Q7 BUF.
TP 5 (C)
23 C OUT
1 C(REC)OUT
IC13.3
QUAD
VR 2
Q 8 BUF.
IC 18
SC
HD
IC13.2
6
5
4
3
2
1
A
B
C
D
E
F
G
H

4.7 VIDEO BOARD BLOCK DIAGRAM



SE BLOCK
VIDEO BLOCK
VIDEO BLOCK
S/S BLOCK
CN 3
Y IN 16
SYNC 8
C IN 18
REC C OUT 2
PB C 5
C OUT 27
PB FM 4
Y OUT 26
REC FM 1
D FF 7
S DET 10
V PUL 11
BLANK P 12
CLK 13
SEL DATA 14
INABLE 15
3.58M / 4.43M 28
Q25 BUF
Q10 BUF
Q177 - Q182 SYNC SEPA
Q173 BUF
Q19 BUF
REC C IN
REC C OUT
PB C
C OUT
PB FM
REC FM
D4,5 NOISE CANCEL
Q37 BUF
Q38 AMP
Q32 BUF
Q34 BUF
Q36,37 DIF AMP
Q39 BUF
Q30 CLAMP
Q31 BIAS
Q28,29 BUF
Q18 BUF
Q26,27 DIF AMP
VR 4
SYNC LEV
TP 5
TP 13
IC9
Q100 BUF
V PULSE
Q105
Q103
Q104
Q106
Q107
Q108
Q109
N PB Y LEV
VR 23
VR 22
SW 5V
S PB Y LEV
SW 5V
Q97
VR 20
NO CLIP
Q101
Q102
Q96
VR17
S W CLIP
VR19
SD CLIP
VR 18
N W CLIP
Q99
Q98 BUF
DGY
TP 12
PB 5V
Q53
Q52
Q51
IC 6-B
PB FM
Q54 BUF
VR 7
NEQ
Q55,56 BUF
Q57 BUF
VHS FILTER
Q58 BUF
IC 6-A
AGC
Q83
Q84
S SER
VR16
TP11
D9
VR 14
S DEV
N DEV
VR 13
VR 15
N CAR
S CAR
SW 5V
Q 80
Q 81
REC
EE
Q 60
Q59
VR8
Q61 BUF
Q62 BUF
Q65 BUF
S-VHS FILTER
Q67 BUF
S EQ 1
VR 9
S EQ 2
Q63 BUF
Q64
Q50 BUF
D FF
TP 10
Q82 BUF
N REC FM LEV
Q175 BUF
VR 6
REC 9V
TP 7
S REC FM LEV
Q46 BUF
VHS HPF
REC FM
Q40 BUF
Q174 BUF
VR 5
Q41 BUF
Q44,45 BUF
Q47 BUF
S-VHS BPF
Q 176
Q42 BUF
FM
Q 48
Q68 BUF
Q69 BUF
FL 1 LPF
Q70 INV
IC 7 1H DL
Q71 BUF
Q72 BUF
Q73 BUF
Q94 BUF
FILTER
3.58M(N) 4.43M(P)
IC 5-B
DOC Y
SER
Q88
Q87
Q 95
FL 2, FL 3 VHS LPF
Q74 BUF
Q75 BUF
TP 8
TP 9
FL 4, FL 5 S-VHS LPF
Q76 BUF
Q77 BUF
S-VHS REC SUB EMPH
Q78 BUF
Q79 BUF
VR 11
VR 12
REC PROCESS IN LEV
REC PROCESS OUT LEV
IC 1 DECODER
SEL DATA
CLK
INABLE
REC
PB
S
N
STL
CAM
SER
EE
Q 2
Q 4
Q 6
5V
REC 5V
9V
REC 9V
PB 5V
Q 1
Q 3
Q 5
L : ON
H : ON
S DET
VR 1
TP 1
TP 2
TP 22
IC 4 S DET
Q 9 BUF
S DET
IC 3
SER DFF
COL. ROT
TP 3
CAM
Q 7 INV
IC2 BUF
EE / CAM
Q 8 INV
REC 5V
Q115 BUF
Q116 BUF
Q117 DL (VHS)
Q 123
Q112 BUF
Q114 BUF
Q118 BUF
Q119 DL (S VHS)
Q120 BUF
Q121, Q122 D L
Q124 BUF
Q113
S (H)
BIAS
BAL. MOD.
IC 10. B
NTSC MODEL ONLY
F M
BAL. MOD
IC 10. A
Q132 BUF
Q136 D L
Q133 BUF
Q131 BUF
Q129 BUF
REC 5V
VR 24
VHS REC C LEV
Q126 INV
Q127
Q 127
SEARCH (H)
Q135 D L
Q134 BUF
Q130 BUF
Q128 BUF
S REC C LEV
VR25
REC C OUT
DOC Y
Q154 BUF
Q155 - Q158 SYNC SEPA
Q159 BUF
3.58M / 4.43M
TP 21
BLANK P
VCXO F
X 1
VC 1
Q171 BUF
TP 20
Q170 INV
VR 30
IC13
RESO
Q186, Q185 BUF
Q184, Q183 BUF
Q183 - Q186 D19, D20 PAL MODEL ONLY
TP 6
C OUT
Q140 BUF
Q143 BUF
Q141
EE / CAM
Q139 INV
Q168
Q169
Q167 BUF
DGY
Q165
Q166
PB (H)
S (H)
VC 2
Q164 INV
COL. ROT
VC2 N : 320fh VCO P : 321fh VCO
Q162 BUF
CROSSTALK CANCEL
Q161 BUF
FL 6
TP 18
COL. ROT
VC 3
FL 7 fsc BPF
PILOT BURST PHASE
Q163 BUF
REC C IN
PB
REC
FL 8 LPF
TP 17
TP 19
Q145 BUF
Q152,151 VHS DL
Q150,149,148 S VHS DL
HIFI TRAP
H TRAP
1.4MHz
15.7KHz
Q153 BUF
PB C
6
5
4
3
2
1
A
B
C
D
E
F
G
H

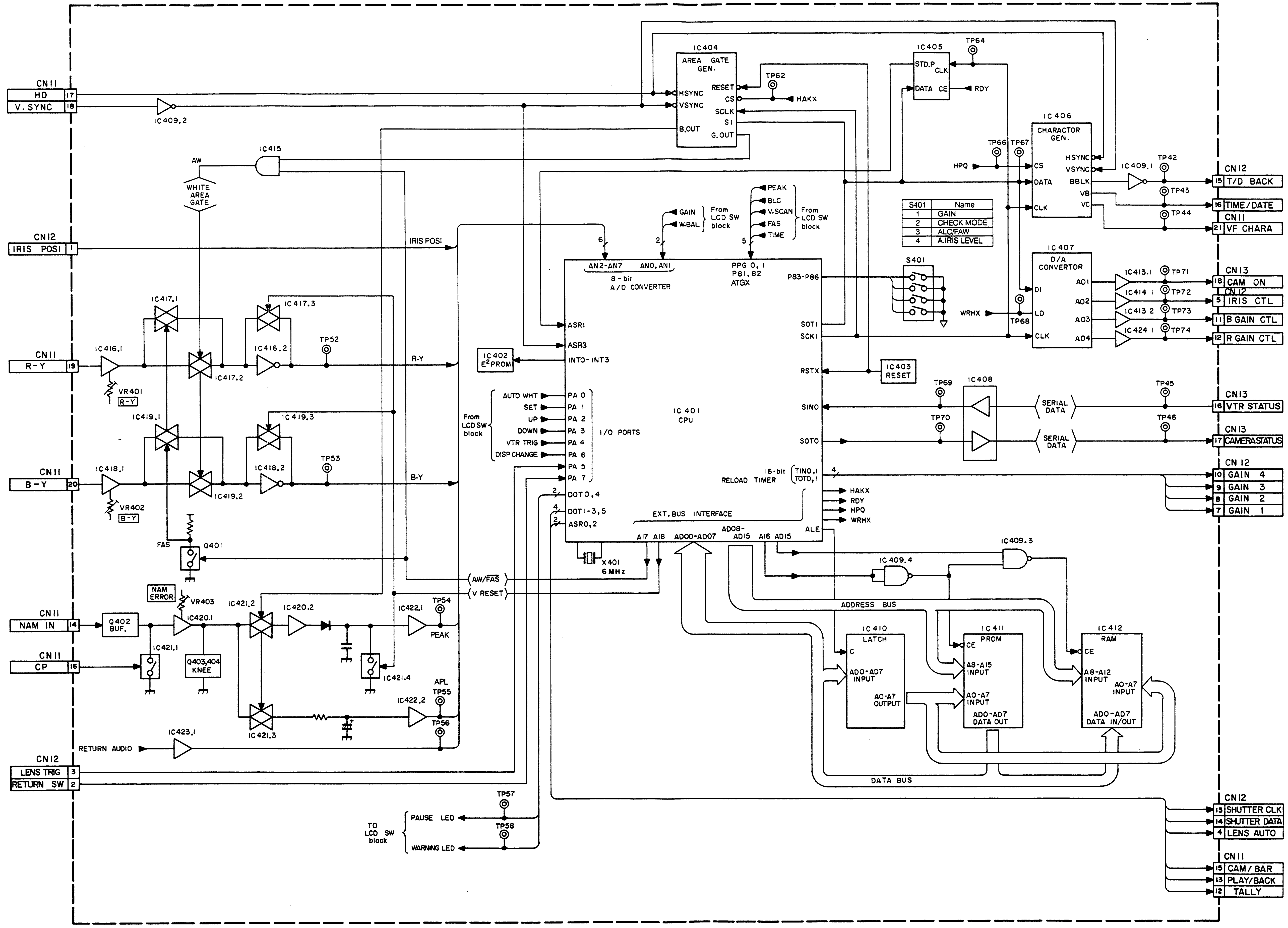
4.8 S/S BOARD BLOCK DIAGRAM



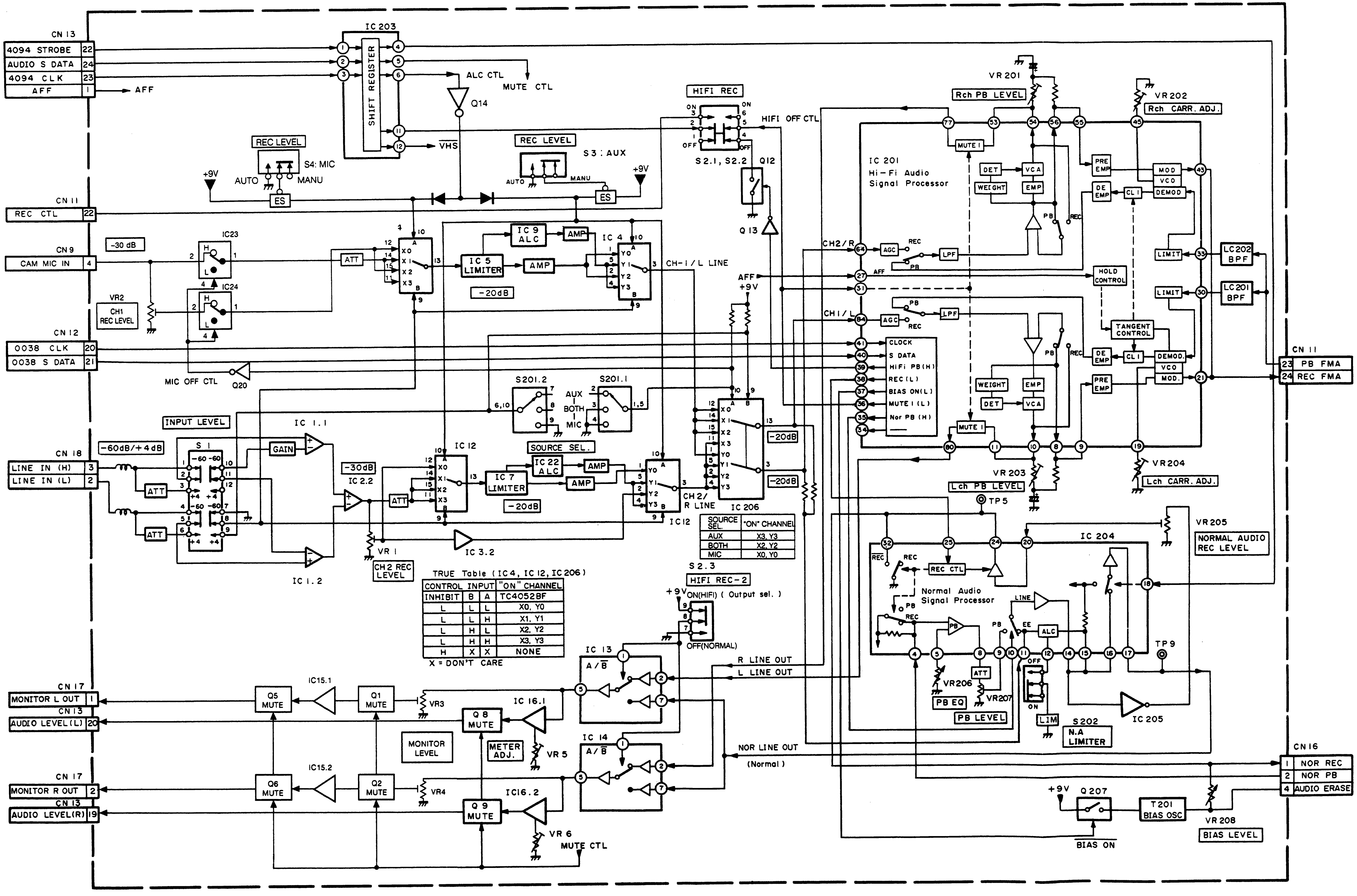
CN 1
FG (+) 84
CTL (+) 28
TRK VR 18
TC DATA 63
CAMERA CMD 1
CAMERA ON 6
LCD RDY 72
S/S RX 69
OPE COVER SW 77
TU REEL 90
SUP REEL 80
DRUM PG 34
DRUM FG 35
DRUM ERR 36
CAM SYNC 56
AL SW 91
DEW SENSOR 81
RM CTL 42
S DET 57
AUTO REC REV SW 9
AEF ON/OFF SW 10
REC MODE SW 11
MODE SENSOR 2 88
MODE SENSOR 1 89
CASS COVER SW 78
S DET SW 79
REC SAFE SW 92
IC 1
AMP.
CAP FG
PB CTL
PB
REC
Q602 BUF.
DRUM ON/OFF
Q25 BUF.
ZFE CTL (Zero Frame Edit)
REC CTL
IC 23.1, 2
DRUM REF
WINDOW COMP.
IC 23.3, 4
CAP SERVO
AL 12V
SERVO
Q14
Q13
Q15
SW 12V
B
FF OUT
VP
V PULSE 58
AFF 13
SEARCH
NON-SEARCH
CAM CMD
Q18,Q19 BUF.
CAMERA CMD
IC 20
MOTER DRIVER
MC MOTER (+) 87
MC MOTER (−) 86
M MOTER CTL (F)
M MOTER CTL (R)
DRUM PV
CAM SYNC
CAP PV
LOAD
DATA
CLOCK
IC 7
PB (NOR & FMD)
VP. COUNTER
CH 2 VP MM
CH 1 VP MM
SER
DRUM PHASE DET
PHASE SHIFT
V SYNC SEP
CTL DELAY
REC CTL
TRACKING MM
INST PB
ASB
GAIN REVISE
CAP PHASE DET
SERIAL DATA DECODER
I/N
FWD
REV
PB CTL
ASB INST
I/M
ASB-REC
NOR
X2
CAP FG
REF COUNTER
PWM GEN
CAP REF COUNTER
RESET
1H REVISE
RF F/F
SW LOGIC
SW MM
DRUM FG COUTER
DRUM FV CONV
CAP FV CONV
GAIN REVISE
1/3
VP
D.FF
SW. MM
VR 2
DRUM FV
X2 OSC
NTSC : 3.58 Hz
PAL : 4.43 Hz
CAP FV
NTSC : 30 Hz
PAL : 25 Hz
NTSC : 600 Hz
PAL : 500 Hz
IC 2.1
CAP SERVO
CAP FV
IC 2.2 AMP
Q2
CAP POWER UP
Q1
NON-SERVO
SERVO
S MODE
Q8
CAP PWR SUPPLY
CAP. DRV
IC 5.2 COMP.
BIAS
Q9
Q5
IC 3.2 COMP.
DRUM REF
IC 2.4
IC 2.3 AMP
DRUM FV
Q6
DRUM PWR SUPPLY
IC 5.1 COMP.
Q7
Q3
IC 3.1 COMP.
IC 27
Q12
IC 12 FRAME SERVO
M.M.
FIELD DETECT
F.F.
V. SYNC SEPA
Q29,Q30 BUF.
TP 10
IC 502
IC 501.1
F.F.
CLK
D.FF
Q501
IC 404
VR 4
F. SERVO
COMP
IC 402.1
IC 403.1
VIDEO REC
M.M.
F. SERVO CTL
IC 17
I/O PORT
CPU
ROM
RAM
DATA BUS
2.5/5V
END SENSOR
START SENSOR
TU REEL FG
SUP REEL FG
IC 16
LCD RDY
LCD CLK
LCD TX
CAP FG
OPE
CAMERA ON
F SERVO CTL
CAMERA CMD
PB CTL
D. FF
DATA
SW DATA
AUDIO R
AUDIO L
KEY B
KEY A
LCD RX
CAP DRV
FF OUT
SEARCH
CAP POWER UP
S MODE
DRUM ON
DM START 38
CAP REV 85
AUDIO REC MUTE 12
AUDIO S DATA 16
H PULSE 59
FLY ON 23
POWER ON CTL 00
VIDEO S DATA 61
V REC MUTE 24
VIDEO PB 26
VIDEO REC 25
4094 CLK 60
4094 STROBE 62
0038 S DATA 20
0038 CLK 21
M MOTER CTL (F)
M MOTER CTL (R)
ZFE CTL
WARN LED S DATA 64
OPE LED S DATA 31
IC 21
CS
CLK
DI/O
EE-PROM
Q26 BUF.
VTR STATUS 51
IC 25 PARALLEL TO SERIAL CONVERTER
IC 19 PARALLEL TO SERIAL CONVERTER
CAMERA ON
IC 6
VOLTAGE DETECT
Q11 INV.
SAVE 9V CTL 99
6
5
4
3
2
1
A
B
C
D
E
F
G
H

S/S BLOCK | AUCP(CPU) BLOCK | AUCP(CPU) BLOCK | AUCP(AUDIO) BLOCK

4.9 AUCP BOARD BLOCK DIAGRAM (CPU SECTION)


CN11
HD 17
V.SYNC 18
IC409.2
IC404
AREA GATE GEN.
HSYNC
VSYNC
RESET
CS
SCLK
SI
B.OUT
G.OUT
TP62
HAKX
IC405
TP64
STD.P
CLK
DATA
CE
RDY
IC406
CHARACTOR GEN.
TP66
TP67
HPQ
CS
DATA
CLK
HSYNC
VSYNC
BBLK
VB
VC
IC409.1
TP42
TP43
TP44
CN12
15 T/D BACK
16 TIME/DATE
CN11
21 VF CHARA
IC415
AW
WHITE AREA GATE
CN12
IRIS POSI 1
IRIS POSI
GAIN
W-BAL
From LCD SW block
PEAK
BLC
V.SCAN
FAS
TIME
From LCD SW block
6
2
5
AN2-AN7
AN0, AN1
8-bit A/D CONVERTER
PPG 0, 1
P81, 82
ATGX
P83-P86
S401
Name
1 GAIN
2 CHECK MODE
3 ALC/FAW
4 A.IRIS LEVEL
IC407
D/A CONVERTOR
DI
LD
CLK
AO1
AO2
AO3
AO4
WRHX
TP68
IC413.1
IC414.1
IC413.2
IC424.1
TP71
TP72
TP73
TP74
CN13
18 CAM ON
CN12
5 IRIS CTL
11 B GAIN CTL
12 R GAIN CTL
IC417.1
IC417.3
IC416.1
IC416.2
IC417.2
TP52
CN11
R-Y 19
VR401
R-Y
R-Y
IC402
E²PROM
ASR1
ASR3
INT0-INT3
SOT1
SCK1
RSTX
IC403
RESET
IC419.1
IC419.3
AUTO WHT
SET
UP
DOWN
VTR TRIG
DISP CHANGE
From LCD SW block
PA 0
PA 1
PA 2
PA 3
PA 4
PA 6
PA 5
PA 7
I/O PORTS
IC 401
CPU
SINO
SOTO
TP69
IC408
TP70
SERIAL DATA
SERIAL DATA
TP45
TP46
CN13
16 VTR STATUS
CN13
17 CAMERA STATUS
IC418.1
IC418.2
IC419.2
TP53
CN11
B-Y 20
B-Y
VR402
B-Y
16-bit RELOAD TIMER
TIN0, 1
TOT0, 1
4
CN12
10 GAIN 4
9 GAIN 3
8 GAIN 2
7 GAIN 1
HAKX
RDY
HPQ
WRHX
DOT0, 4
DOT1-3, 5
ASR0, 2
EXT. BUS INTERFACE
ALE
A17
A18
AD00-AD07
AD08-AD15
A16
AD15
X401
6MHz
FAS
Q401
IC409.3
IC409.4
AW/FAS
V RESET
NAM ERROR
VR403
IC421.2
IC420.2
IC422.1
TP54
PEAK
CN11
NAM IN 14
Q402 BUF.
IC420.1
CN11
CP 16
IC421.1
Q403,404 KNEE
IC421.4
APL
TP55
IC422.2
TP56
IC421.3
ADDRESS BUS
IC410
LATCH
C
AD0-AD7 INPUT
A0-A7 OUTPUT
IC411
PROM
CE
A8-A15 INPUT
A0-A7 INPUT
AD0-AD7 DATA OUT
IC412
RAM
CE
A8-A12 INPUT
A0-A7 INPUT
AD0-AD7 DATA IN/OUT
DATA BUS
RETURN AUDIO
IC423.1
CN12
LENS TRIG 3
RETURN SW 2
TP57
TO LCD SW block
PAUSE LED
TP58
WARNING LED
CN12
13 SHUTTER CLK
14 SHUTTER DATA
4 LENS AUTO
CN11
15 CAM/BAR
13 PLAY/BACK
12 TALLY
A
B
C
D
E
F
G
H
1
2
3
4
5
6

4.10 AUCP BOARD BLOCK DIAGRAM (AUDIO SECTION)


CN 13
4094 STROBE 22
AUDIO S DATA 24
4094 CLK 23
AFF 1
AFF
IC 203
SHIFT REGISTER
ALC CTL
MUTE CTL
Q14
VHS
REC LEVEL
S4: MIC
AUTO
MANU
ES
+9V
S3 : AUX
HIFI REC
S2.1, S2.2
Q12
Q13
HIFI OFF CTL
CN 11
REC CTL 22
CN 9
CAM MIC IN 4
-30 dB
IC23
IC24
VR2
CH1 REC LEVEL
CN 12
0038 CLK 20
0038 S DATA 21
MIC OFF CTL
Q20
ATT
IC 9 ALC
AMP
IC 5 LIMITER
-20dB
IC 4
CH-1/L LINE
S201.2
S201.1
AUX
BOTH
MIC
INPUT LEVEL
IC 1.1
GAIN
CN 18
LINE IN (H) 3
LINE IN (L) 2
-60dB/+4dB
S 1
IC 2.2
-30dB
IC 12
IC 7 LIMITER
IC 22 ALC
SOURCE SEL.
CH 2/ R LINE
IC 206
-20dB
VR 1
IC 3.2
CH2 REC LEVEL
IC 1.2
S 2.3
HIFI REC-2
ON(HIFI) (Output sel.)
OFF(NORMAL)
IC 13
IC 14
R LINE OUT
L LINE OUT
NOR LINE OUT
(Normal)
CN 17
MONITOR L OUT 1
CN 13
AUDIO LEVEL (L) 20
CN 17
MONITOR R OUT 2
CN 13
AUDIO LEVEL (R) 19
Q5 MUTE
IC15.1
Q1 MUTE
VR3
Q8 MUTE
IC 16.1
VR 5
METER ADJ.
MONITOR LEVEL
Q6 MUTE
IC15.2
Q2 MUTE
VR4
Q 9 MUTE
IC16.2
VR 6
MUTE CTL
VR 201
Rch PB LEVEL
VR 202
Rch CARR. ADJ.
IC 201
Hi-Fi Audio Signal Processor
MUTE I
DET
VCA
WEIGHT
EMP
PRE EMP
DE EMP
CL I
MOD
VCO
DEMOD
CH2/R
AGC
LPF
REC
PB
AFF
HOLD CONTROL
LIMIT
LC202 BPF
LC201 BPF
CH1/L
TANGENT CONTROL
CLOCK
S DATA
HiFi PB(H)
REC(L)
BIAS ON(L)
MUTE I (L)
Nor PB (H)
CN 11
23 PB FMA
24 REC FMA
VR 203
Lch PB LEVEL
TP5
VR 204
Lch CARR. ADJ.
VR 205
NORMAL AUDIO REC LEVEL
IC 204
REC CTL
Normal Audio Signal Processor
LINE
EE
ALC
ATT
VR206
PB EQ
VR207
PB LEVEL
OFF
ON
LIM
S202
N.A LIMITER
IC 205
TP 9
CN16
1 NOR REC
2 NOR PB
4 AUDIO ERASE
+9V
Q207
BIAS ON
T201 BIAS OSC
VR 208
BIAS LEVEL

TRUE Table (IC4, IC12, IC206)

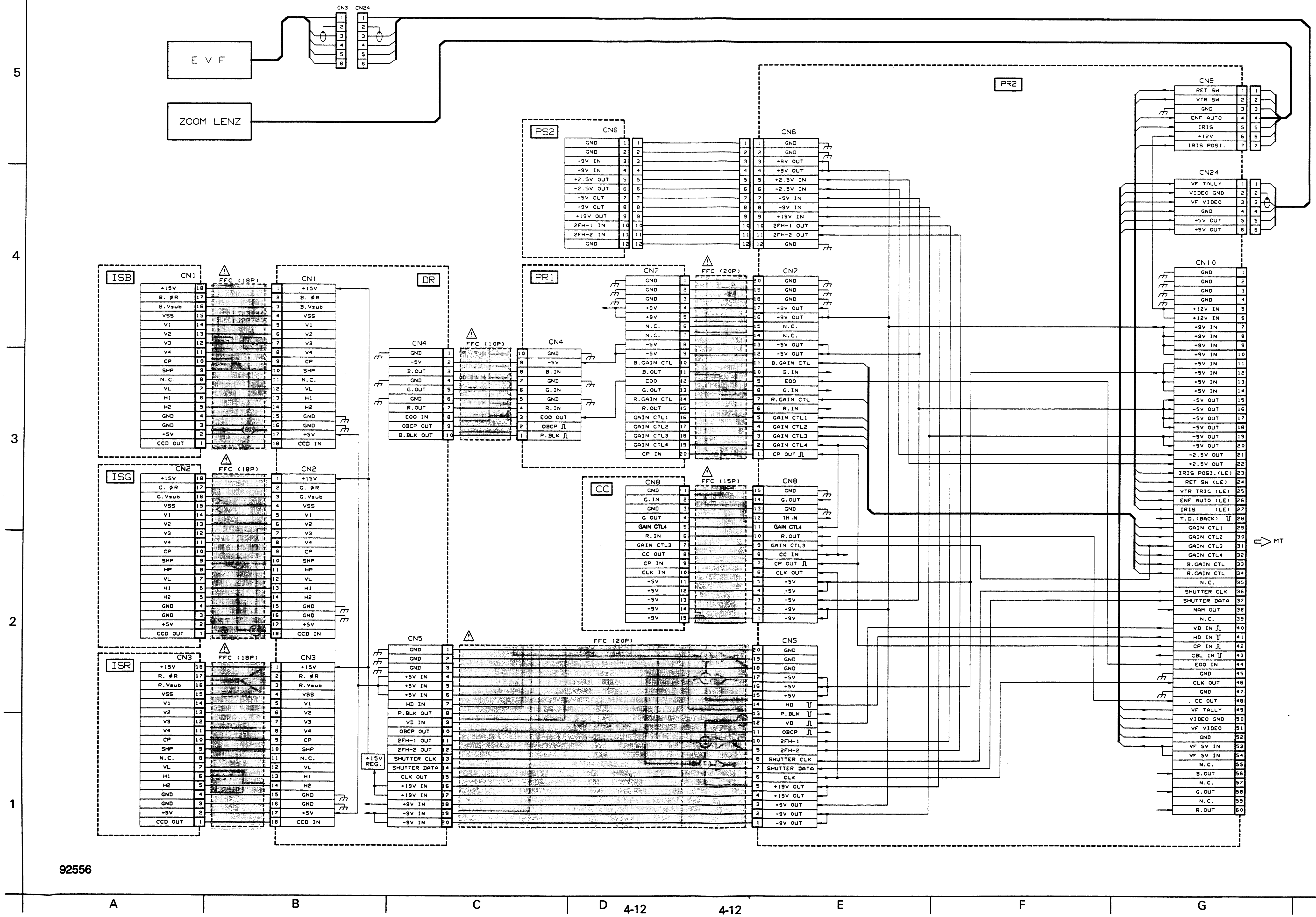
CONTROL INPUT			"ON" CHANNEL
INHIBIT	B	A	TC4052BF
L	L	L	X0, Y0
L	L	H	X1, Y1
L	H	L	X2, Y2
L	H	H	X3, Y3
H	X	X	NONE

X = DON'T CARE

SOURCE SEL.	"ON" CHANNEL
AUX	X3, Y3
BOTH	X2, Y2
MIC	X0, Y0

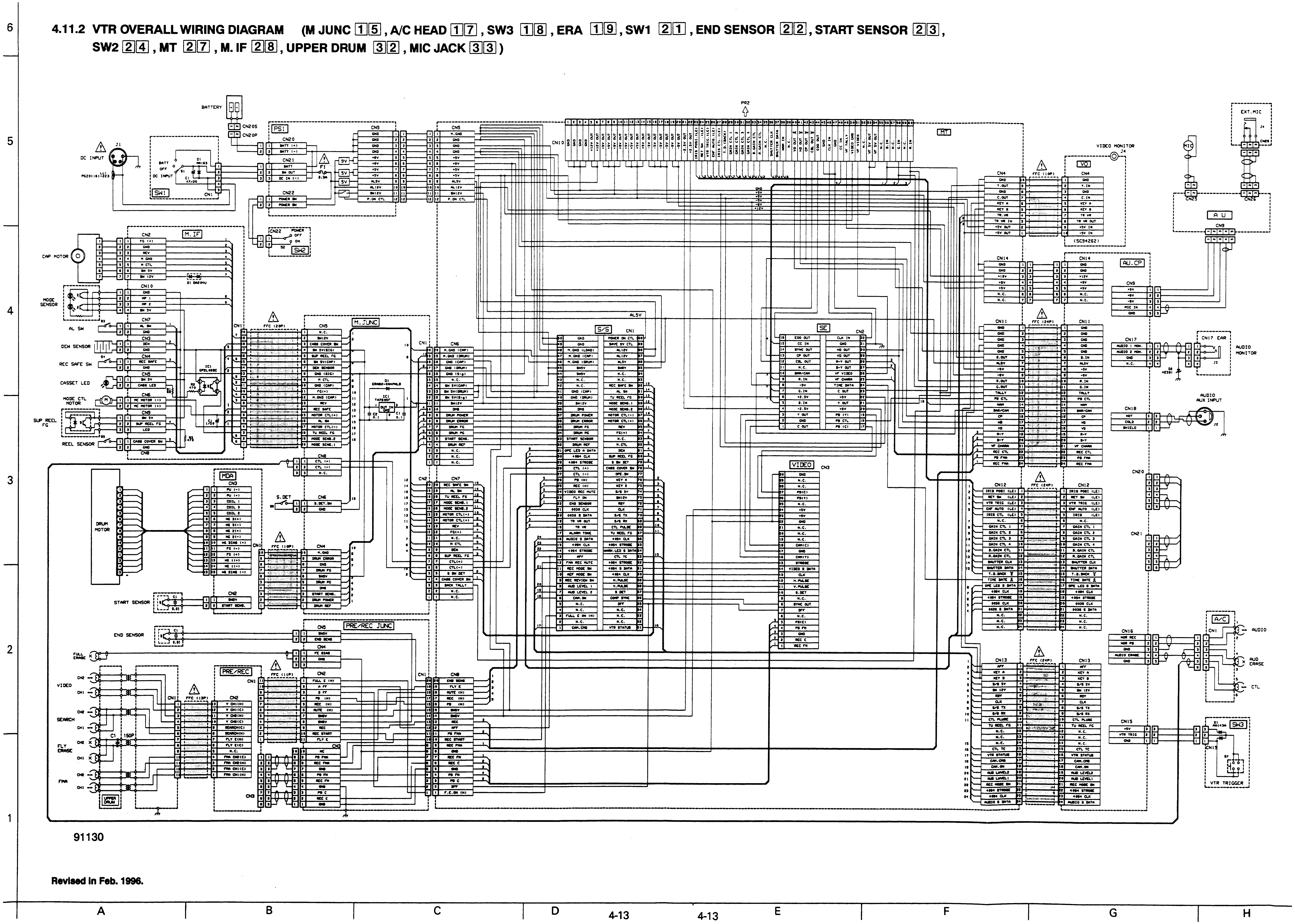
4.11 OVERALL WIRING DIAGRAM

4.11.1 CAMERA OVERALL WIRING DIAGRAM


6
5
4
3
2
1
EVF
ZOOM LENZ
CN3
CN24
PS2
CN6
GND
+9V IN
+2.5V OUT
-2.5V OUT
-5V OUT
-9V OUT
+19V OUT
2FH-1 IN
2FH-2 IN
PR2
+9V OUT
+2.5V IN
-2.5V IN
-5V IN
-9V IN
+19V IN
2FH-1 OUT
2FH-2 OUT
CN9
RET SW
VTR SW
ENF AUTO
IRIS
+12V
IRIS POSI.
CN24
VF TALLY
VIDEO GND
VF VIDEO
+5V OUT
+9V OUT
CN10
ISB
CN1
FFC (18P)
+15V
B. φR
B.Vsub
VSS
V1
V2
V3
V4
CP
SHP
N.C.
VL
H1
H2
+5V
CCD OUT
CCD IN
DR
CN4
FFC (10P)
-5V
B.OUT
G.OUT
R.OUT
EOO IN
OBCP OUT
B.BLK OUT
PR1
B.IN
G.IN
R.IN
EOO OUT
OBCP
P.BLK
CN7
FFC (20P)
+9V
B.GAIN CTL
EOO
R.GAIN CTL
GAIN CTL1
GAIN CTL2
GAIN CTL3
GAIN CTL4
CP IN
CP OUT
ISG
CN2
G. φR
G.Vsub
HP
CC
CN8
FFC (15P)
1H IN
CC OUT
CC IN
CLK IN
CLK OUT
ISR
CN3
R. φR
R.Vsub
CN5
+5V IN
HD IN
P.BLK OUT
VD IN
OBCP OUT
2FH-1 OUT
2FH-2 OUT
SHUTTER CLK
SHUTTER DATA
+19V IN
+9V IN
-9V IN
+15V REG.
HD
P.BLK
VD
2FH-1
2FH-2
CLK
+19V OUT
-9V OUT
+12V IN
+5V IN
-5V OUT
-2.5V OUT
+2.5V OUT
IRIS POSI. (LE)
RET SW (LE)
VTR TRIG (LE)
ENF AUTO (LE)
IRIS (LE)
T.D.(BACK)
NAM OUT
VD IN
HD IN
CP IN
CBL IN
EOO IN
CC OUT
VF 5V IN
B.OUT
MT
A
B
C
D
E
F
G
H

92556

4.11.2 VTR OVERALL WIRING DIAGRAM (M JUNC 15, A/C HEAD 17, SW3 18, ERA 19, SW1 21, END SENSOR 22, START SENSOR 23, SW2 24, MT 27, M. IF 28, UPPER DRUM 32, MIC JACK 33)

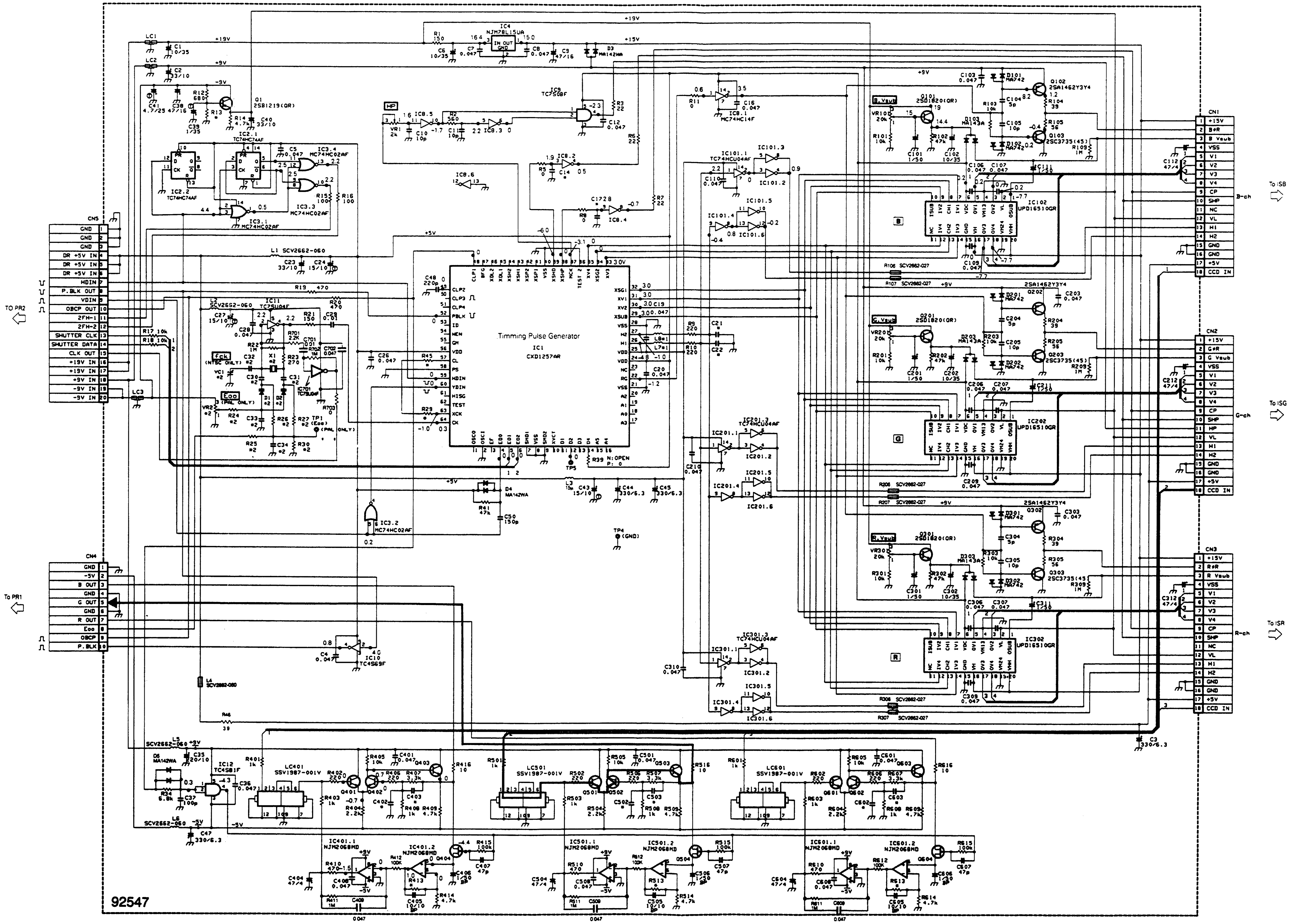


6
5
4
3
2
1
A
B
C
D
E
F
G
H
BATTERY
CN20S
CN20P
PSI
CN20
CN21
CN22
CN5
CN1
DC INPUT
J1
SW1
F1
9V
5V
5V
CN22 POWER OFF ON
SW2
CAP MOTOR
M.IF
CN2
CN10
CN7
CN3
CN4
CN5
CN6
CN9
CN8
MODE SENSOR
AL SW
DEW SENSOR
REC SAFE SW
CASSET LED
MODE CTL MOTOR
SUP REEL FG
REEL SENSOR
FFC (20P)
M.JUNC
IC1
DRUM MOTOR
MDA
S.DET
FFC (10P)
START SENSOR
END SENSOR
PRE/REC JUNC
PRE/REC
FFC (11P)
FFC (13P)
FULL ERASE
VIDEO
SEARCH
FLY ERASE
FMA
UPPER DRUM
C1 150P
PR2
MT
S/S
ALSV
SE
VIDEO
VO
FFC (10P)
(SC94262)
VIDEO MONITOR
EXT.MIC
MIC
CN25
CN26
AU
AU.CP
CN14
CN11
FFC (24P)
CN12
CN13
CN17 EAR
AUDIO MONITOR
CN18
AUDIO AUX INPUT
CN20
CN21
CN16
A/C
AUDIO
AUD ERASE
CTL
CN15
SW3
VTR TRIGGER

91130

Revised in Feb. 1996.

4.12 DR BOARD SCHEMATIC DIAGRAM 01


92547
Timming Pulse Generator
IC1
CXD1257AR
IC4
NJM78L15UA
CN5
GND
DR +5V IN
HDIN
P.BLK OUT
VDIN
OBCP OUT
2FH-1
2FH-2
SHUTTER CLK
SHUTTER DATA
CLK OUT
+19V IN
+9V IN
-9V IN
TO PR2
CN4
-5V
B OUT
G OUT
R OUT
Eoo
OBCP
P.BLK
To PR1
CN1
CN2
CN3
+15V
B+R
G+R
R+R
B Vsub
G Vsub
R Vsub
VSS
V1
V2
V3
V4
CP
SHP
NC
VL
HI
H2
CCD IN
B-ch
G-ch
R-ch
To ISB
To ISG
To ISR
IC102 UPD16510GR
IC202 UPD16510GR
IC302 UPD16510GR
Q102 2SA1462Y3Y4
Q103 2SC3735(45)
Q101 2SD1820(QR)
IC101.1 TC74HCU04AF
IC201.1 TC74HCU04AF
IC301.1 TC74HCU04AF
IC11 TC75U04F
IC10 TC4S69F
IC12 TC4S81F
IC9 TC7S08F
IC8.1 MC74HC14F
IC2.1 TC74HC74AF
IC3.1 MC74HC02AF
LC401 SSV1987-001V
LC501 SSV1987-001V
LC601 SSV1987-001V
IC401.1 NJM2068MD
IC501.1 NJM2068MD
IC601.1 NJM2068MD
Q1 2SB1219(QR)
+19V
+15V
+9V
-9V
+5V
TP4 (GND)

NOTE 1.UNLESS OTHER WISE SPECIFIED
NPN TRANSISTORS :2SC3930(BC)
FETS :2SK209L
2.PARTS WITH * MARK ARE OPEN CIRCUITS.
3.L7,L8 SCV2662-027 (*1 MARK)
4 *2 MARK

	R24	R25	R26	R27	R30	C30	C31	C32	C33	C34
NTSC	open	open	0	0	0	8P	22P	22P	open	open
PAL	100k	22k	100k	100k	open	100p	100p	open	0.047u	0.047u

	VR2	D1	D2	VC1	X1
NTSC	open	open	open	NAT3112-200RZ	CE41081-A0A
PAL	20k	MA335TX	MA335TX	open	CE41212-001

Revised in Feb. 1996.

4.13 DR CIRCUIT BOARD

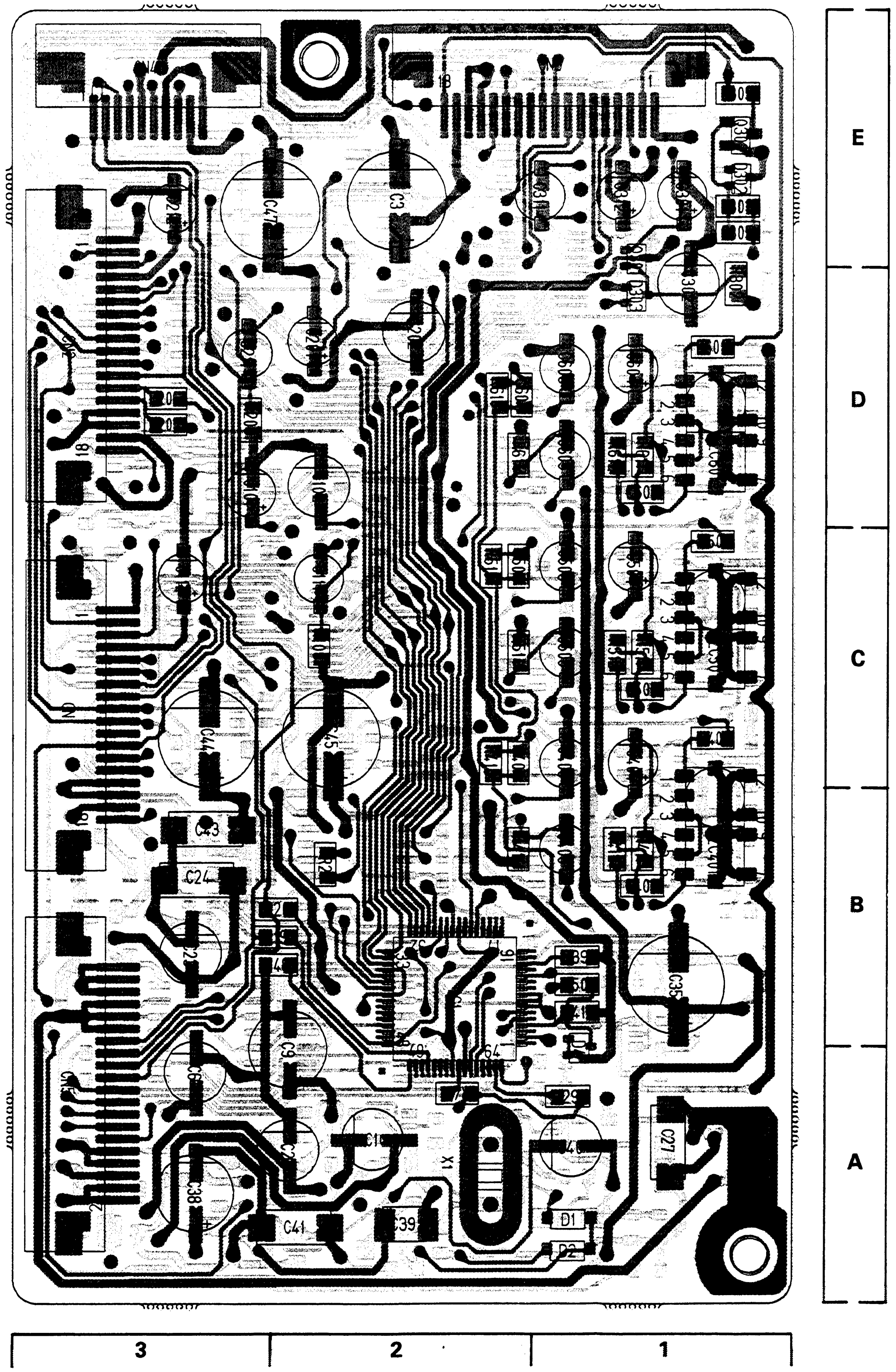
● ADDRESS TABLE OF BOARD PARTS

Each address may have an address error by one interval.

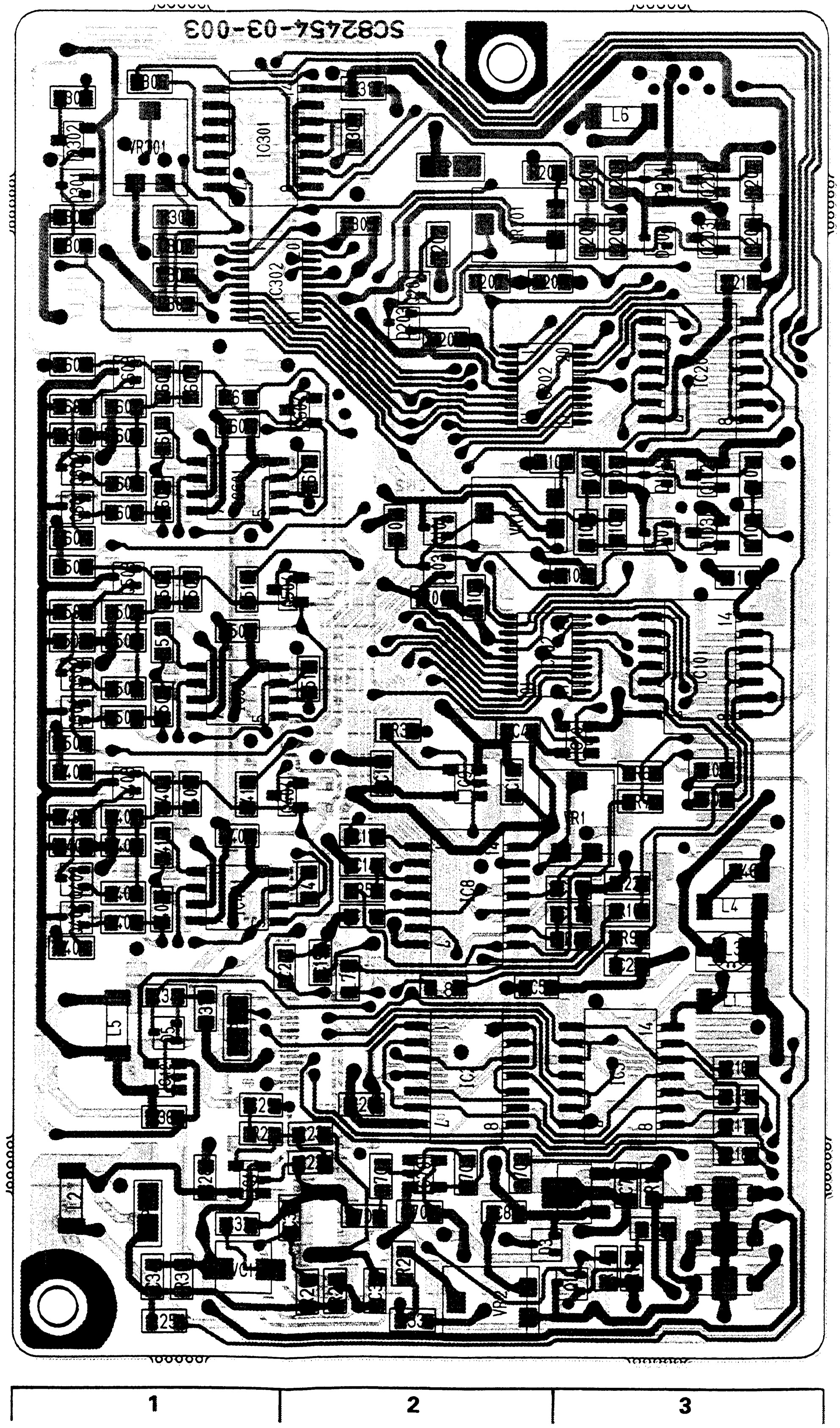
A-1C
Side ┘ │ └ Y axis
└ X axis

IC1	A- 2B	R22	B- 2A	R610	B- 1D	C209	B- 3E
IC2	B- 2B	R23	B- 2A	R611	A- 1D	C210	B- 3E
IC3	B- 3B	R24	B- 2A	R612	A- 1D	C211	A- 3D
IC4	B- 3A	R25	B- 1A	R613	B- 2D	C212	A- 3E
IC8	B- 2B	R26	B- 2A	R614	A- 2D	C301	A- 1E
IC9	B- 2C	R27	B- 2A	R615	A- 2D	C302	A- 1D
IC10	B- 3C	R29	A- 1A	R616	B- 1D	C303	B- 1E
IC11	B- 1A	R30	B- 1A	R701	B- 2A	C304	B- 1E
IC12	B- 1B	R34	B- 1B	R702	B- 2A	C305	A- 1E
IC101	B- 3C	R39	A- 1B	R703	B- 2A	C306	B- 1E
IC102	B- 2C	R41	A- 1B			C307	B- 1E
IC201	B- 3D	R45	A- 2A	VR1	B- 3C	C309	B- 2E
IC202	B- 2D	R46	B- 3B	VR2	B- 2A	C310	B- 2E
IC301	B- 1E	R101	B- 3D	VR101	B- 2D	C311	A- 1E
IC302	B- 1E	R102	B- 2D	VR201	B- 2E	C312	A- 1E
IC401	B- 1B	R103	B- 3D	VR301	B- 1E	C401	B- 1B
IC501	B- 1C	R104	B- 3D			C402	B- 1C
IC601	B- 1D	R105	B- 3D	C1	A- 2A	C403	B- 1C
IC701	B- 2A	R106	B- 3C	C2	A- 2A	C404	A- 1C
		R107	B- 3C	C3	A- 2E	C405	A- 1B
Q1	B- 3A	R109	A- 2C	C4	B- 2C	C406	A- 1C
Q101	B- 2D	R201	B- 2E	C5	B- 2B	C407	A- 2C
Q102	B- 3D	R202	B- 2E	C6	A- 3A	C408	B- 1B
Q103	B- 3D	R203	B- 3E	C7	B- 3A	C409	A- 1B
Q201	B- 2E	R204	B- 3E	C8	B- 2A	C501	B- 1C
Q202	B- 3E	R205	B- 3E	C9	A- 2B	C502	B- 1C
Q203	B- 3E	R206	A- 3D	C10	B- 3B	C503	B- 1C
Q301	A- 1E	R207	A- 3D	C11	B- 2B	C504	A- 1C
Q302	B- 1E	R209	A- 3D	C12	B- 2C	C505	A- 1C
Q303	A- 1E	R301	B- 1E	C14	B- 2B	C506	A- 1C
Q401	B- 1B	R302	A- 1D	C16	B- 2C	C507	A- 2C
Q402	B- 1B	R303	A- 1E	C17	B- 3B	C508	B- 1C
Q403	B- 1C	R304	B- 1E	C19	B- 2B	C509	A- 1C
Q404	B- 2C	R305	A- 1E	C20	B- 2B	C601	B- 1D
Q501	B- 1C	R306	B- 1E	C21	B- 3B	C602	B- 1D
Q502	B- 1C	R307	B- 2E	C22	B- 3B	C603	B- 1D
Q503	B- 1C	R309	B- 1D	C23	A- 3B	C604	A- 1D
Q504	B- 2C	R401	A- 1C	C24	A- 3B	C605	A- 1D
Q601	B- 1D	R402	B- 1B	C26	B- 2A	C606	A- 1D
Q602	B- 1D	R403	B- 1B	C27	A- 1A	C607	A- 2D
Q603	B- 1D	R404	B- 1B	C28	B- 1A	C608	B- 1D
Q604	B- 2D	R405	B- 1C	C29	B- 1A	C609	A- 1D
		R406	B- 1B	C30	B- 2A	C701	B- 2A
D1	A- 1A	R407	B- 1C	C31	B- 2A	C702	B- 2A
D2	A- 1A	R408	B- 1B	C32	B- 1A		
D3	B- 2A	R409	B- 1C	C33	B- 2A	VC1	B- 1A
D4	A- 1B	R410	B- 1B	C34	B- 1A		
D5	B- 1B	R411	A- 1B	C35	A- 1B	L1	B- 3B
D101	B- 3D	R412	A- 1B	C36	B- 1A	L2	B- 1A
D102	B- 3D	R413	B- 2B	C37	B- 1B	L3	B- 3B
D103	B- 2C	R414	A- 2B	C38	A- 3A	L4	B- 3B
D201	B- 3E	R415	A- 2C	C39	A- 2A	L5	B- 1B
D202	B- 3E	R416	B- 1C	C40	A- 1A	L6	B- 3E
D203	B- 2D	R501	A- 1C	C41	A- 2A	L7	B- 2B
D301	B- 1E	R502	B- 1C	C43	A- 3B	L8	B- 2B
D302	A- 1E	R503	B- 1C	C44	A- 3C		
D303	A- 1D	R504	B- 1C	C45	A- 2C	TP1	B- 1A
		R505	B- 1C	C47	A- 3E	TP4	B- 2E
R1	B- 3A	R506	B- 1C	C48	A- 3B	TP5	B- 1B
R2	A- 2B	R507	B- 1C	C50	A- 1B		
R3	B- 2C	R508	B- 1C	C101	A- 3D	LC1	B- 3A
R5	B- 2B	R509	B- 1C	C102	A- 2D	LC2	B- 3A
R6	B- 3C	R510	B- 1C	C103	B- 3D	LC3	B- 3A
R7	B- 3C	R511	A- 1C	C104	B- 3D	LC401	A- 1B
R8	B- 3B	R512	A- 1C	C105	B- 3D	LC501	A- 1C
R9	B- 3B	R513	B- 2C	C106	B- 2C	LC601	A- 1D
R10	B- 3B	R514	A- 2C	C107	B- 2C		
R11	B- 2B	R515	A- 2C	C109	B- 3C	X1	A- 2A
R12	B- 3A	R516	B- 1C	C110	B- 3C		
R13	B- 3A	R601	A- 1D	C111	A- 2C	CN1	A- 3C
R14	B- 3A	R602	B- 1D	C112	A- 3C	CN2	A- 3D
R15	B- 3B	R603	B- 1D	C201	A- 2D	CN3	A- 1E
R16	B- 3B	R604	B- 1D	C202	A- 2D	CN4	A- 3E
R17	B- 3A	R605	B- 1D	C203	B- 3E	CN5	A- 3A
R18	B- 3A	R606	B- 1D	C204	B- 3E		
R19	A- 3B	R607	B- 1D	C205	B- 3E		
R20	A- 3B	R608	B- 1D	C206	B- 2D		
R21	B- 1A	R609	B- 1D	C207	B- 2E		

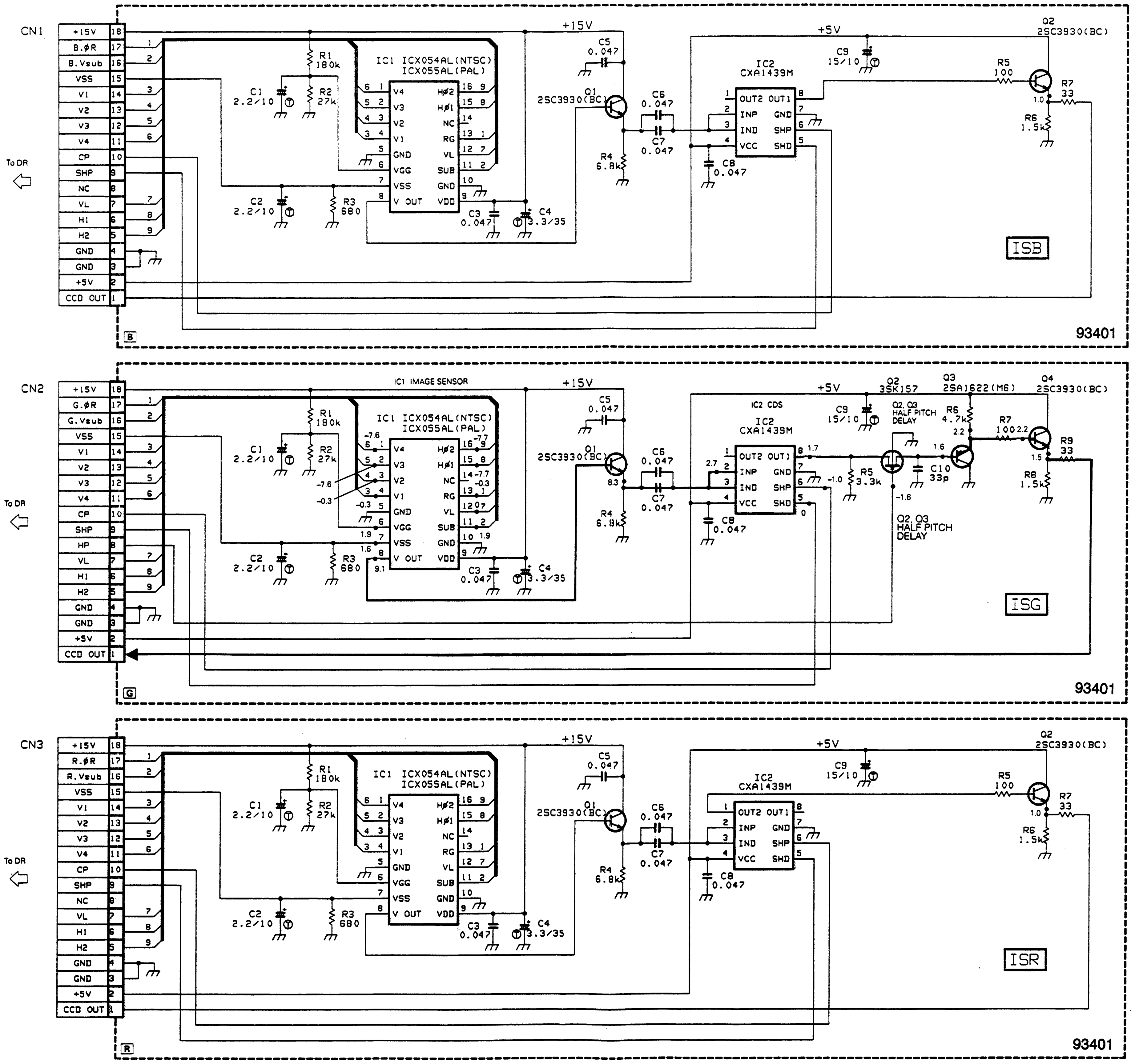
- Side A -



- Side B -



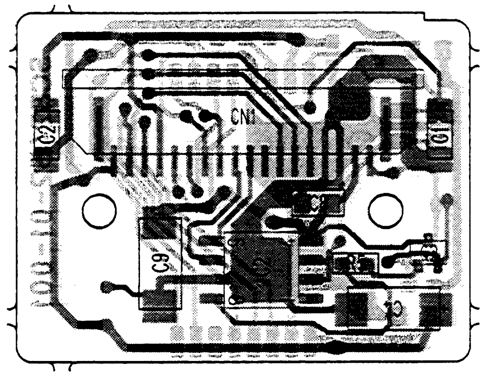
4.14 IS (B, G, R) BOARD SCHEMATIC DIAGRAM 02, 03, 04

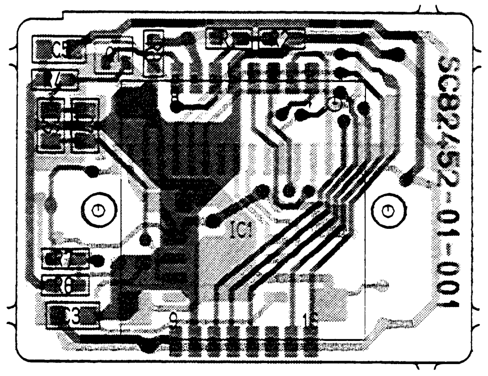

CN1
+15V
B.φR
B.Vsub
VSS
V1
V2
V3
V4
CP
SHP
NC
VL
H1
H2
GND
GND
+5V
CCD OUT
To DR
R1 180k
R2 27k
R3 680
C1 2.2/10
C2 2.2/10
C3 0.047
C4 3.3/35
C5 0.047
C6 0.047
C7 0.047
C8 0.047
C9 15/10
IC1 ICX054AL(NTSC) ICX055AL(PAL)
V4
V3
V2
V1
GND
VGG
VSS
V OUT
Hφ2
Hφ1
NC
RG
VL
SUB
GND
VDD
+15V
+5V
Q1 2SC3930(BC)
R4 6.8k
IC2 CXA1439M
OUT2
OUT1
INP
GND
IND
SHP
VCC
SHD
Q2 2SC3930(BC)
R5 100
R6 1.5k
R7 33
ISB
B
93401
CN2
G.φR
G.Vsub
HP
IC1 IMAGE SENSOR
IC2 CDS
Q2 3SK157
Q3 2SA1622(M6)
Q4 2SC3930(BC)
Q2, Q3 HALF PITCH DELAY
R5 3.3k
R6 4.7k
R7 100
R8 1.5k
R9 33
C10 33p
-7.6
-7.7
-0.3
1.9
1.6
9.1
83
2.7
1.7
-1.0
-1.6
2.2
1.5
0
ISG
G
93401
CN3
R.φR
R.Vsub
ISR
R
93401

4.15 IS (B, G, R) CIRCUIT BOARD

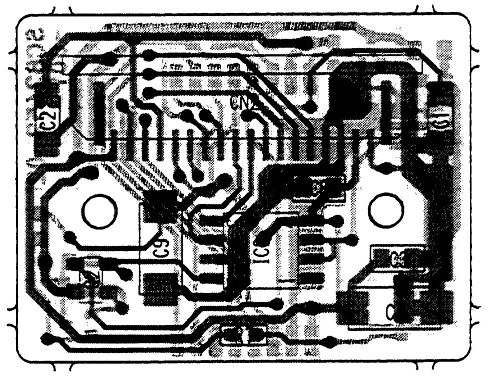
– Side A – **– Side B –**

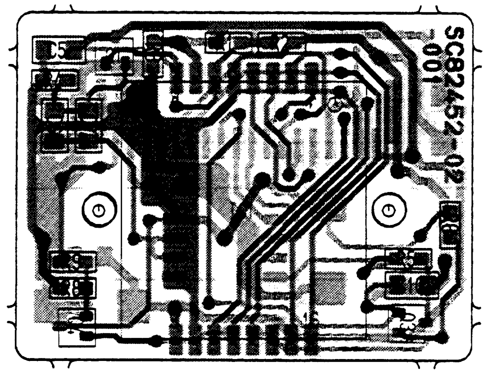
– ISB –



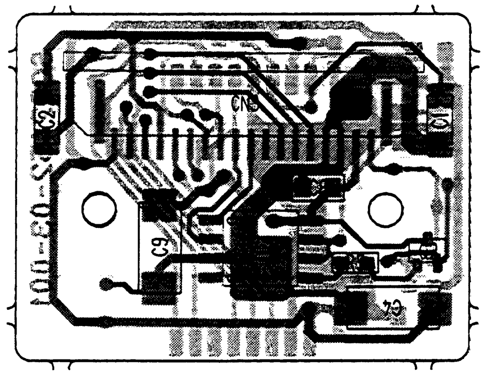

SC82452-01-001
IC1

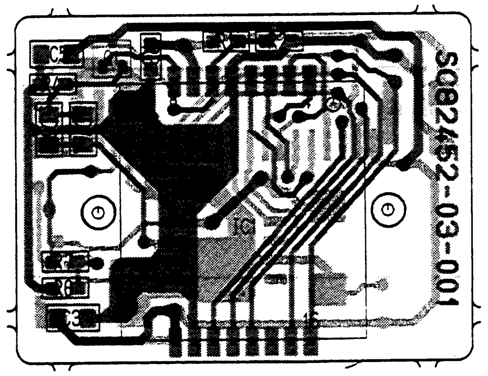
– ISG –


CN2
C2
C9
IC1


SC82452-02-001

– ISR –




SC82452-03-001
IC1

6

4.16 PR1 BOARD SCHEMATIC DIAGRAM 05

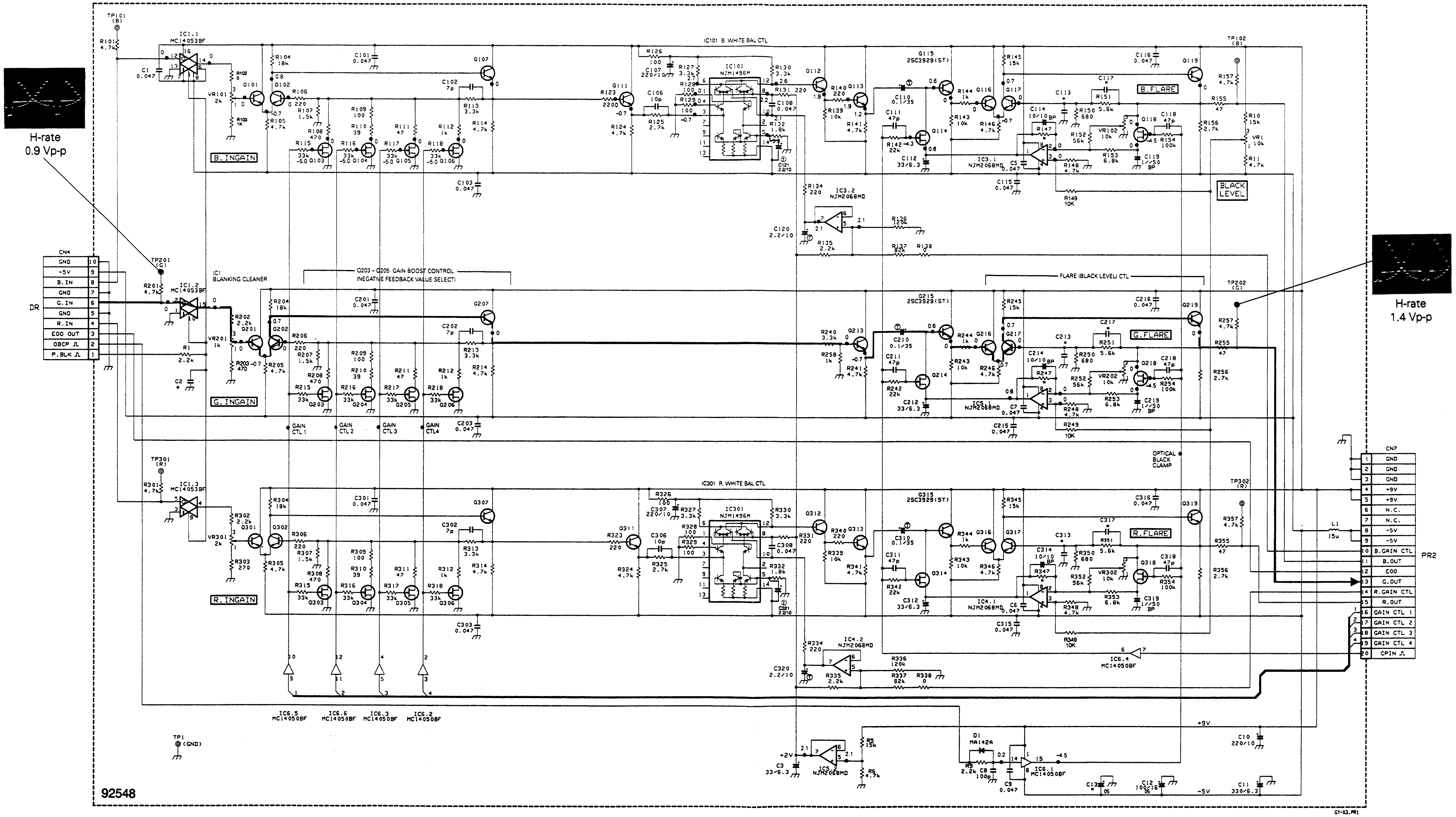
5

4

3

2

1


H-rate
0.9 Vp-p
H-rate
1.4 Vp-p
TP101 (B)
TP201 (G)
TP301 (R)
TP102 (B)
TP202 (G)
TP302 (R)
TP1 (GND)
IC1.1 MC14053BF
IC1.2 MC14053BF
IC1.3 MC14053BF
IC1 BLANKING CLEANER
B.INGAIN
G.INGAIN
R.INGAIN
Q203 - Q205 GAIN BOOST CONTROL (NEGATIVE FEEDBACK VALUE SELECT)
GAIN CTL 1
GAIN CTL 2
GAIN CTL 3
GAIN CTL 4
IC101 B.WHITE BAL CTL
IC101 NJM1496M
IC301 R.WHITE BAL CTL
IC301 NJM1496M
Q115 2SC3929(ST)
Q215 2SC3929(ST)
Q315 2SC3929(ST)
IC3.1 NJM2068MD
IC3.2 NJM2068MD
IC5.1 NJM2068MD
IC4.1 NJM2068MD
IC4.2 NJM2068MD
IC5.2 NJM2068MD
B.FLARE
G.FLARE
R.FLARE
FLARE (BLACK LEVEL) CTL
BLACK LEVEL
OPTICAL BLACK CLAMP
IC6.4 MC14050BF
IC6.5 MC14050BF
IC6.6 MC14050BF
IC6.3 MC14050BF
IC6.2 MC14050BF
IC6.1 MC14050BF
D1 MA142A
+9V
-5V
C10 220/10
C11 330/6.3
L1 15u
CN4
GND 10
-5V 9
B.IN 8
GND 7
G.IN 6
GND 5
R.IN 4
EOO OUT 3
OBCP ⎍ 2
P.BLK ⎍ 1
DR
CN7
1 GND
2 GND
3 GND
4 +9V
5 +9V
6 N.C.
7 N.C.
8 -5V
9 -5V
10 B.GAIN CTL
11 B.OUT
12 EOO
13 G.OUT
14 R.GAIN CTL
15 R.OUT
16 GAIN CTL 1
17 GAIN CTL 2
18 GAIN CTL 3
19 GAIN CTL 4
20 CPIN ⎍
PR2
92548
GY-X3.PR1

NOTE
1. UNLESS OTHER WISE SPECIFIED
NPN TRANSISTOR :2SC3930(BC)
FETS :2SK209L
2. THE PARTS MARKED BY * ARE OPEN

Revised in Feb. 1996.

A B C D E F G H

4.17 PR1 CIRCUIT BOARD

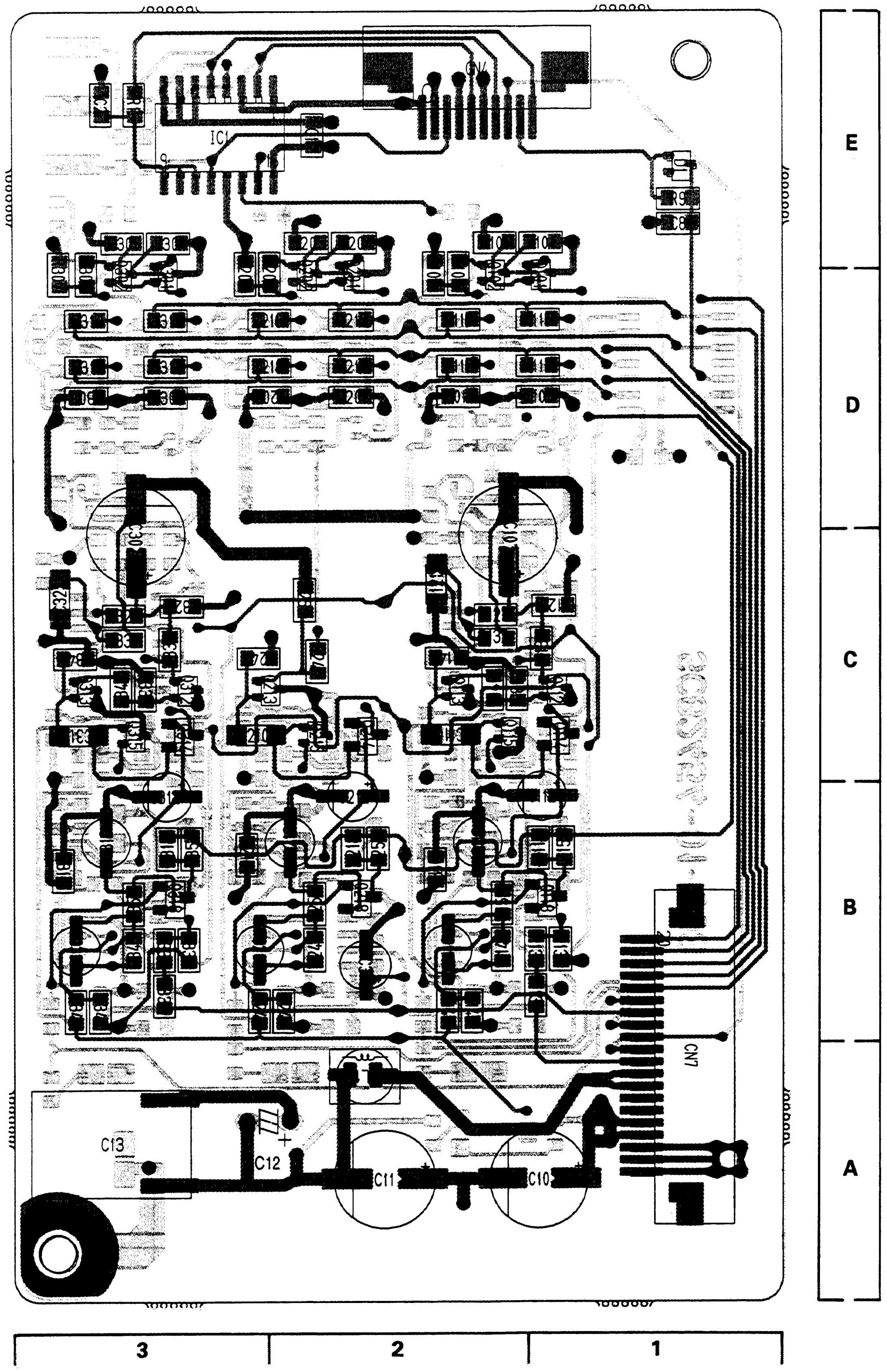
● ADDRESS TABLE OF BOARD PARTS

Each address may have an address error by one interval.

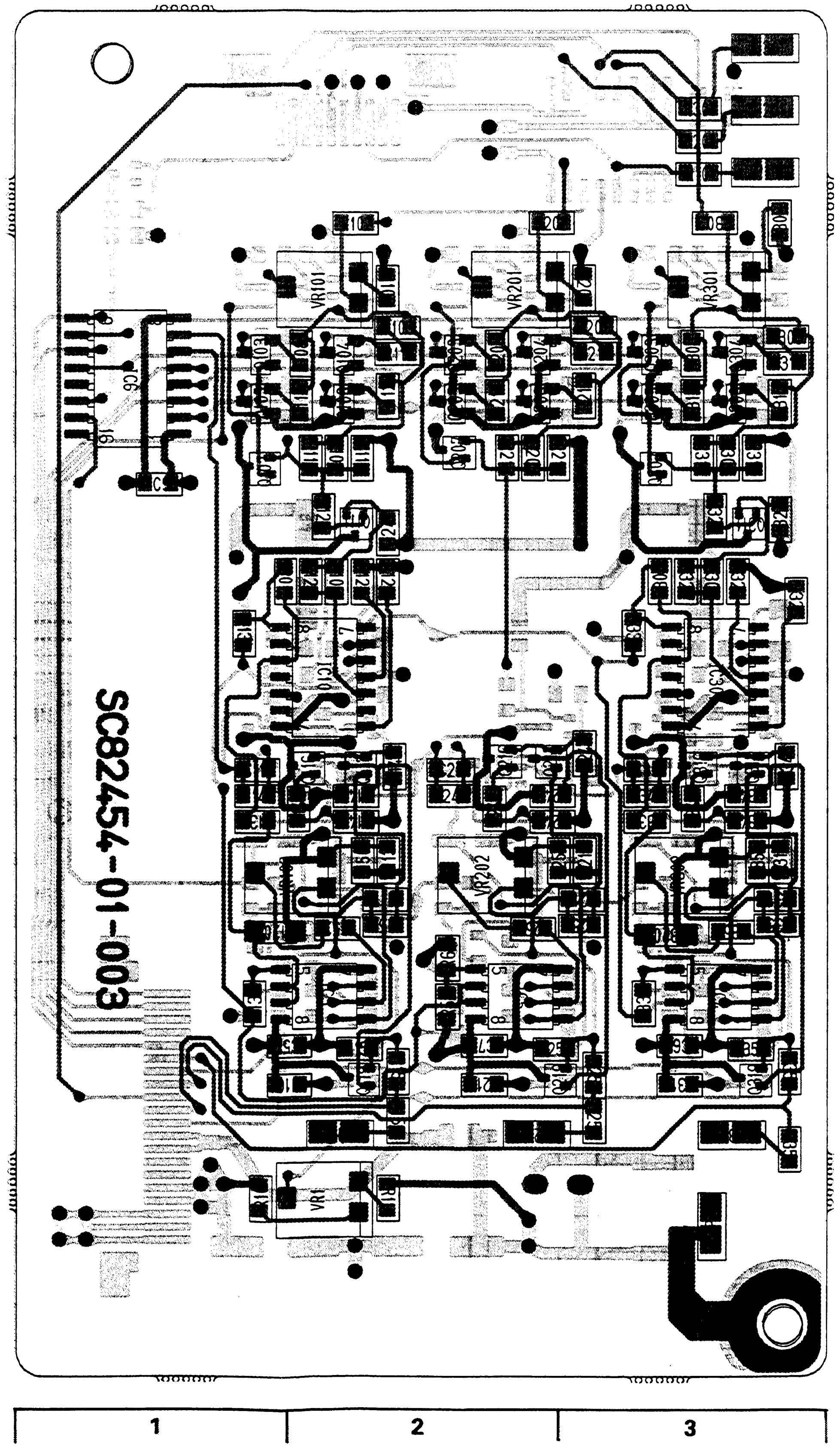
A-1C
Side — A
1 — X axis
C — Y axis

IC1	A- 2E
IC3	B- 2B
IC4	B- 3B
IC5	B- 2B
IC6	B- 1D
IC101	B- 2C
IC301	B- 3C
Q101	A- 1D
Q102	A- 2D
Q103	B- 1D
Q104	B- 2D
Q105	B- 1D
Q106	B- 2D
Q107	B- 1D
Q111	B- 2D
Q112	A- 1C
Q113	A- 2C
Q114	A- 1C
Q115	A- 2C
Q116	B- 2C
Q117	B- 2C
Q118	A- 1B
Q119	B- 2B
Q201	A- 2D
Q202	A- 2D
Q203	B- 2D
Q204	B- 2D
Q205	B- 2D
Q206	B- 2D
Q207	B- 2D
Q213	A- 2C
Q214	A- 2C
Q215	A- 2C
Q216	B- 2C
Q217	B- 2C
Q218	A- 2B
Q219	B- 2B
Q301	A- 3D
Q302	A- 3D
Q303	B- 3D
Q304	B- 3D
Q305	B- 3D
Q306	B- 3D
Q307	B- 3D
Q311	B- 3D
Q312	A- 3C
Q313	A- 3C
Q314	A- 3C
Q315	A- 3C
Q316	B- 3C
Q317	B- 3C
Q318	A- 3B
Q319	B- 3B
D1	A- 1E
R1	A- 3E
R5	B- 2B
R6	B- 2B
R9	A- 1E
R10	B- 1A
R11	B- 2A
R101	B- 3E
R102	B- 2E
R103	B- 2D
R104	A- 1E
R105	A- 2E
R106	A- 2D
R107	A- 2D
R108	B- 2D
R109	B- 2D
R110	B- 2D
R111	B- 2D
R112	B- 2D
R113	B- 2D
R114	B- 2D
R115	A- 1D
R116	A- 2D
R117	A- 1D
R118	A- 2D
R123	B- 2D
R124	B- 2D
R125	B- 2C
R126	A- 1C
R127	A- 2C
R128	B- 2C
R129	B- 2C
R130	A- 1C
R131	B- 1C
R132	A- 2C
R134	B- 1C
R135	B- 1B
R136	A- 1B
R137	A- 1B
R138	A- 1B
R139	A- 2C
R140	A- 2C
R141	A- 2C
R142	B- 1C
R143	B- 2C
R144	B- 2C
R145	B- 2C
R146	B- 2C
R147	A- 2B
R148	A- 2B
R149	A- 2B
R150	B- 2B
R151	B- 2B
R152	B- 2B
R153	A- 2B
R154	A- 1B
R155	B- 2B
R156	B- 2B
R157	B- 2A
R201	B- 3E
R202	B- 2E
R203	B- 3D
R204	A- 2E
R205	A- 2E
R206	A- 2D
R207	A- 3D
R208	B- 2D
R209	B- 3D
R210	B- 3D
R211	B- 2D
R212	B- 3D
R213	B- 2D
R214	B- 2D
R215	A- 2D
R216	A- 2D
R217	A- 2D
R218	A- 2D
R240	A- 2C
R241	A- 3C
R242	B- 2C
R243	B- 2C
R244	B- 2C
R245	B- 2C
R246	B- 3C
R247	A- 2B
R248	A- 2B
R249	A- 3B
R250	B- 2B
R251	B- 3B
R252	B- 2B
R253	A- 2B
R254	A- 2B
R255	B- 3B
R256	B- 2B
R257	B- 3A
R258	A- 2C
R301	B- 3E
R302	B- 3E
R303	B- 3E
R304	A- 3E
R305	A- 3E
R306	A- 3D
R307	A- 3D
R308	B- 3D
R309	B- 3D
R310	B- 3D
R311	B- 3D
R312	B- 3D
R313	B- 3D
R314	B- 3D
R315	A- 3D
R316	A- 3D
R317	A- 3D
R318	A- 3D
R323	B- 3D
R324	B- 3D
R325	B- 3C
R326	A- 3C
R327	A- 3C
R328	B- 3C
R329	B- 3C
R330	A- 3C
R331	B- 3C
R332	A- 3C
R334	B- 3C
R335	B- 3B
R336	A- 3B
R337	A- 3B
R338	A- 3B
R339	A- 3C
R340	A- 3C
R341	A- 3C
R342	B- 3C
R343	B- 3C
R344	B- 3C
R345	B- 3C
R346	B- 3C
R347	A- 3B
R348	A- 3B
R349	A- 3B
R350	B- 3B
R351	B- 3B
R352	B- 3B
R353	A- 3B
R354	A- 3B
R355	B- 3B
R356	B- 3B
R357	B- 3A
VR1	B- 2A
VR101	B- 2D
VR102	B- 2B
VR201	B- 2D
VR202	B- 2B
VR301	B- 3D
VR302	B- 3B
C1	A- 2E
C2	A- 3E
C3	A- 2B
C5	B- 2B
C6	B- 3B
C7	B- 2B
C8	A- 1E
C9	B- 1D
C10	A- 1A
C11	A- 2A
C12	A- 2A
C13	A- 3A
C101	A- 1D
C102	B- 2D
C103	A- 2D
C106	B- 2C
C107	A- 2C
C108	B- 1C
C110	A- 2C
C111	B- 1C
C112	A- 1B
C113	B- 2B
C114	A- 2B
C115	A- 2B
C116	B- 2B
C117	B- 2B
C118	A- 1B
C119	A- 2B
C120	B- 1B
C121	A- 2C
C201	A- 2D
C202	B- 2D
C203	A- 2D
C210	A- 3C
C211	B- 2C
C212	A- 2B
C213	B- 3B
C214	A- 3B
C215	A- 3B
C216	B- 2B
C217	B- 3B
C218	A- 2B
C219	A- 2B
C301	A- 3D
C302	B- 3D
C303	A- 3D
C306	B- 3C
C307	A- 3C
C308	B- 3C
C310	A- 3C
C311	B- 3C
C312	A- 3B
C313	B- 3B
C314	A- 3B
C315	A- 3B
C316	B- 3B
C317	B- 3B
C318	A- 3B
C319	A- 3B
C320	B- 3B
C321	A- 3C
L1	A- 2A
TP1	B- 3A
TP101	B- 3E
TP102	B- 2A
TP201	B- 3E
TP202	B- 2A
TP301	B- 3E
TP302	B- 3A
CN4	A- 2E
CN7	A- 1A

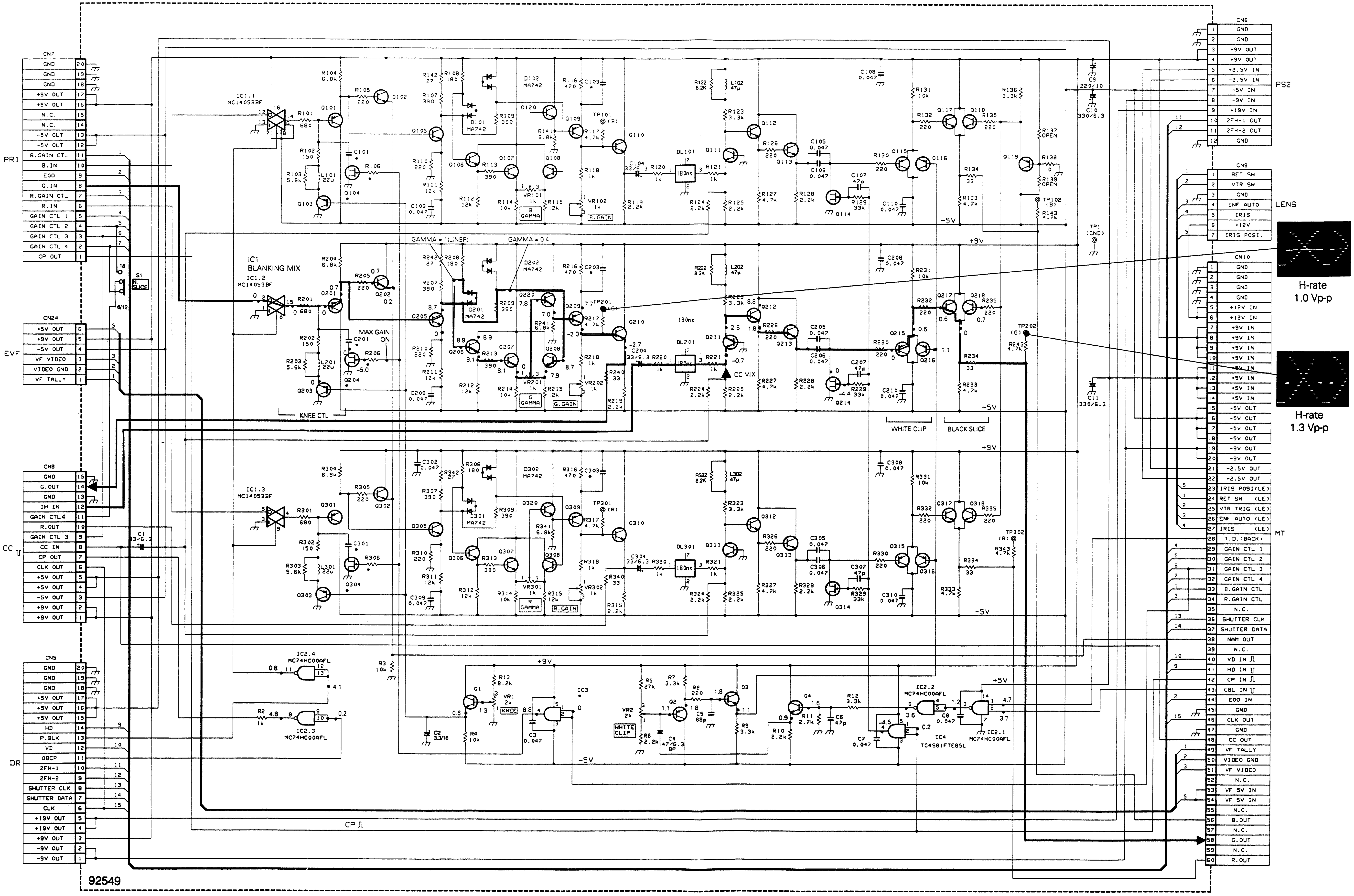
– Side A –



– Side B –



4.18 PR2 BOARD SCHEMATIC DIAGRAM 06


CN7
GND
GND
GND
+9V OUT
+9V OUT
N.C.
N.C.
-5V OUT
-5V OUT
B.GAIN CTL
B.IN
E00
G.IN
R.GAIN CTL
R.IN
GAIN CTL 1
GAIN CTL 2
GAIN CTL 3
GAIN CTL 4
CP OUT
PR1
CN24
+5V OUT
+9V OUT
-5V OUT
VF VIDEO
VIDEO GND
VF TALLY
EVF
S1
N SLICE
CN8
GND
G.OUT
GND
IH IN
GAIN CTL4
R.OUT
GAIN CTL 3
CC IN
CP OUT
CLK OUT
+5V OUT
+5V OUT
-5V OUT
+9V OUT
+9V OUT
CC
CN5
GND
GND
GND
+5V OUT
+5V OUT
+5V OUT
HD
P.BLK
VD
OBCP
2FH-1
2FH-2
SHUTTER CLK
SHUTTER DATA
CLK
+19V OUT
+19V OUT
+9V OUT
-9V OUT
-9V OUT
DR
IC1.1 MC14053BF
IC1 BLANKING MIX
IC1.2 MC14053BF
IC1.3 MC14053BF
KNEE CTL
MAX GAIN ON
GAMMA = 1(LINER)
GAMMA = 0.4
B GAMMA
B.GAIN
G GAMMA
G.GAIN
R GAMMA
R.GAIN
TP101 (B)
TP201 (G)
TP301 (R)
TP102 (B)
TP202 (G)
TP302 (R)
TP1 (GND)
DL101 180ns
DL201 180ns
DL301 180ns
CC MIX
WHITE CLIP
BLACK SLICE
+9V
-5V
IC2.4 MC74HC00AFL
IC2.3 MC74HC00AFL
IC2.2 MC74HC00AFL
IC2.1 MC74HC00AFL
IC3
IC4 TC4S81FTE85L
KNEE
WHITE CLIP
CP ⎍
CN6
GND
GND
+9V OUT
+9V OUT
+2.5V IN
-2.5V IN
-5V IN
-9V IN
+19V IN
2FH-1 OUT
2FH-2 OUT
GND
PS2
CN9
RET SW
VTR SW
GND
ENF AUTO
IRIS
+12V
IRIS POSI.
LENS
CN10
GND
GND
GND
GND
+12V IN
+12V IN
+9V IN
+9V IN
+9V IN
+9V IN
+5V IN
+5V IN
+5V IN
+5V IN
-5V OUT
-5V OUT
-5V OUT
-5V OUT
-9V OUT
-9V OUT
-2.5V OUT
+2.5V OUT
IRIS POSI(LE)
RET SW (LE)
VTR TRIG (LE)
ENF AUTO (LE)
IRIS (LE)
T.D.(BACK)
GAIN CTL 1
GAIN CTL 2
GAIN CTL 3
GAIN CTL 4
B.GAIN CTL
R.GAIN CTL
N.C.
SHUTTER CLK
SHUTTER DATA
NAM OUT
N.C.
VD IN
HD IN
CP IN
CBL IN
E00 IN
GND
CLK OUT
GND
CC OUT
VF TALLY
VIDEO GND
VF VIDEO
N.C.
VF 5V IN
VF 5V IN
N.C.
B.OUT
N.C.
G.OUT
N.C.
R.OUT
MT
H-rate 1.0 Vp-p
H-rate 1.3 Vp-p
92549

NOTE 1.UNLESS OTHER WISE SPECIFIED
NPN TRANSISTORS :2SC3930(BC)
PNP TRANSISTORS :2SA1532(BC)
FETS :2SK209L

2. PARTS WITH • MARK ARE OPEN CIRCUITS.

Revised in Feb. 1996.

4.19 PR2 CIRCUIT BOARD

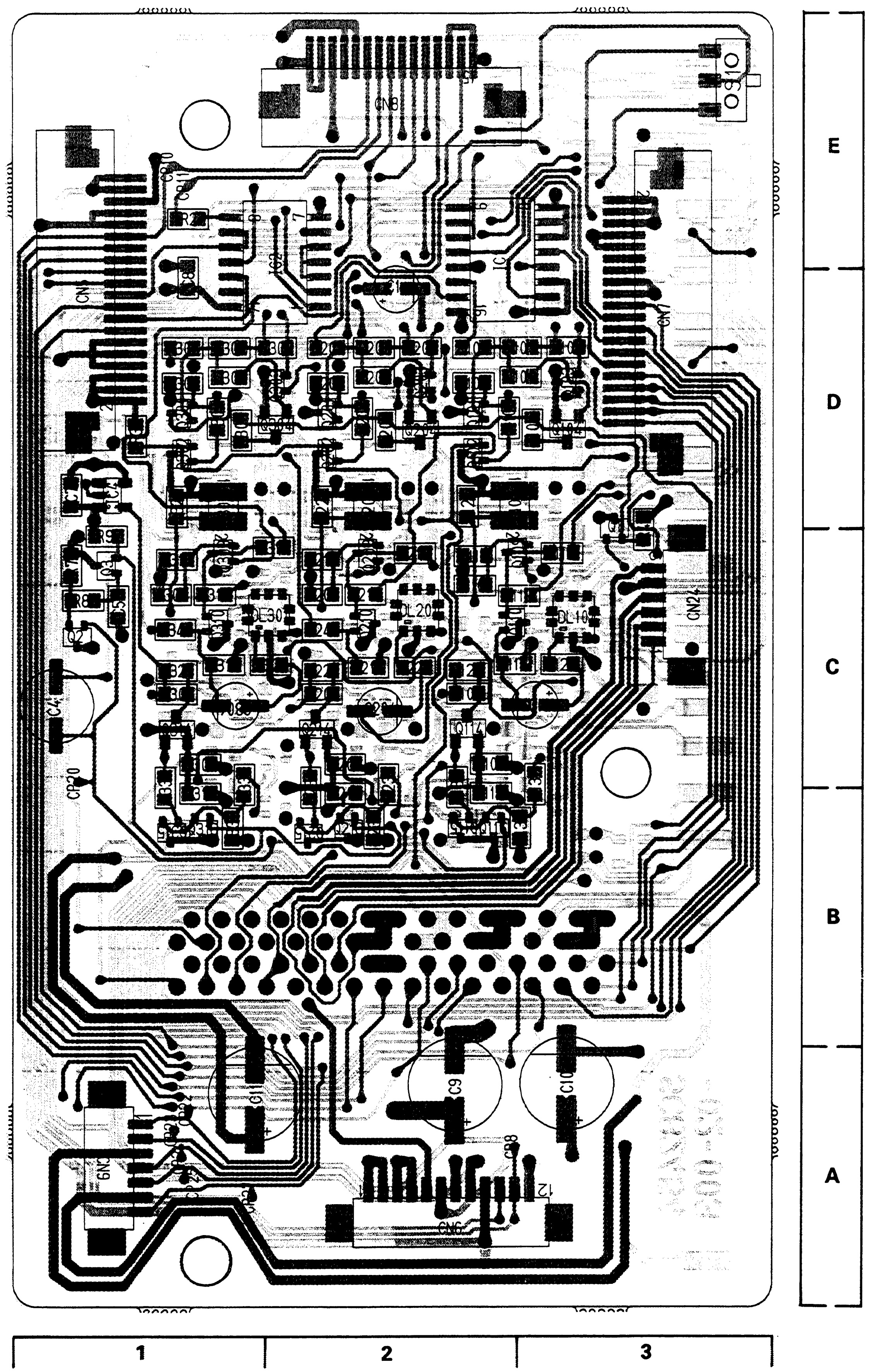
● ADDRESS TABLE OF BOARD PARTS

Each address may have an address error by one interval.

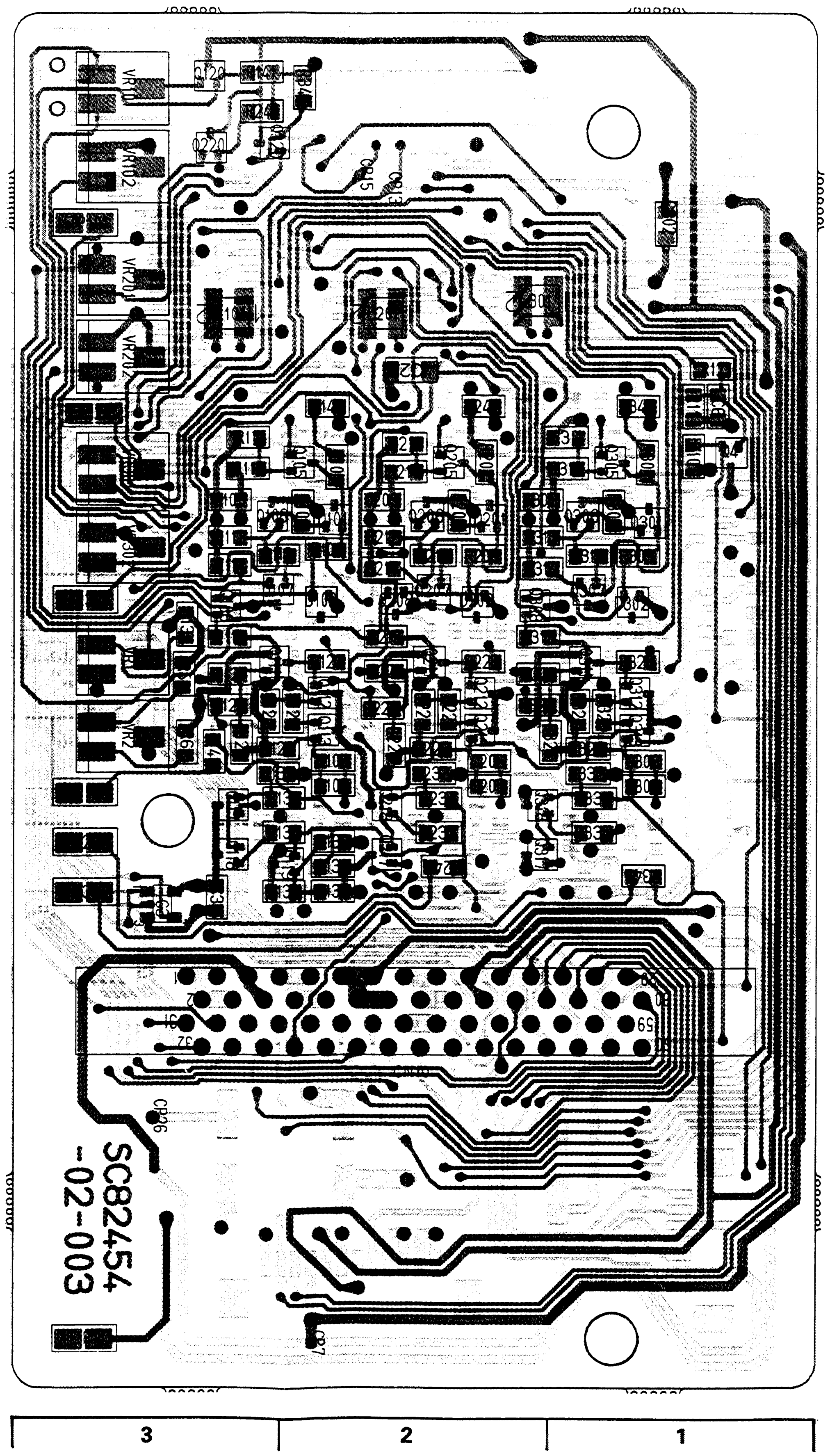
A-1C
Side ── (A) ; X axis ── (1) ; Y axis ── (C)

IC1	A- 2D	R3	A- 1D	R224	B- 2C	C101	A- 3D
IC2	A- 2D	R4	A- 3C	R225	B- 2C	C103	A- 2C
IC3	B- 3B	R5	B- 3C	R226	B- 2C	C104	A- 3C
IC4	A- 1D	R6	B- 3C	R227	B- 2C	C105	B- 2C
		R7	A- 1C	R228	B- 2C	C106	B- 2C
Q1	A- 3C	R8	A- 1C	R229	A- 2C	C107	A- 2C
Q2	A- 1C	R9	A- 1C	R230	A- 2B	C108	A- 2C
Q3	A- 1C	R10	B- 1D	R231	A- 2B	C109	B- 3D
Q4	B- 1D	R11	B- 1D	R232	A- 2B	C110	A- 2B
Q101	A- 2D	R12	B- 1D	R233	B- 2C	C201	A- 2D
Q102	A- 2D	R13	B- 3C	R234	B- 2C	C203	A- 2C
Q103	A- 3D	R101	A- 2D	R235	B- 2B	C204	A- 2C
Q104	A- 3D	R102	A- 3D	R240	A- 2C	C205	B- 2C
Q105	B- 2D	R103	A- 3D	R241	B- 3E	C206	B- 2C
Q106	B- 3D	R104	A- 2D	R242	B- 2D	C207	A- 2C
Q107	B- 3C	R105	A- 2D	R243	B- 2B	C208	A- 2C
Q108	B- 3C	R106	A- 3D	R301	A- 1D	C209	B- 2D
Q109	A- 3C	R107	B- 2D	R302	A- 1D	C210	A- 2B
Q110	A- 2C	R108	B- 2D	R303	A- 2D	C301	A- 1D
Q111	B- 3C	R109	B- 2D	R304	A- 1D	C302	B- 1E
Q112	B- 2C	R110	B- 3D	R305	A- 1D	C303	A- 1C
Q113	B- 2C	R111	B- 3D	R306	A- 1D	C304	A- 1C
Q114	A- 2C	R112	B- 3D	R307	B- 1D	C305	B- 1C
Q115	A- 2B	R113	B- 3D	R308	B- 1D	C306	B- 1C
Q116	A- 2B	R114	B- 3C	R309	B- 1D	C307	A- 1C
Q117	B- 3C	R115	B- 3C	R310	B- 1D	C308	A- 1C
Q118	B- 3B	R116	A- 2C	R311	B- 1D	C309	B- 2D
Q119	B- 2B	R117	A- 3C	R312	B- 2D	C310	A- 1B
Q120	B- 3E	R118	A- 3C	R313	B- 1D		
Q201	A- 2D	R119	A- 2C	R314	B- 2C	L101	B- 3D
Q202	A- 2D	R120	A- 3C	R315	B- 2C	L102	A- 2D
Q203	A- 2D	R121	B- 3C	R316	A- 1C	L201	B- 2D
Q204	A- 2D	R122	A- 2D	R317	A- 1C	L202	A- 2D
Q205	B- 2D	R123	B- 2C	R318	A- 2C	L301	B- 2D
Q206	B- 2D	R124	B- 3C	R319	A- 1C	L302	A- 1D
Q207	B- 2C	R125	B- 3C	R320	A- 2C		
Q208	B- 2C	R126	B- 2C	R321	B- 2C	DL101	A- 3C
Q209	A- 2C	R127	B- 3C	R322	A- 1D	DL201	A- 2C
Q210	A- 2C	R128	B- 3C	R323	B- 1C	DL301	A- 2C
Q211	B- 2C	R129	A- 2C	R324	B- 2C		
Q212	B- 2C	R130	A- 2B	R325	B- 2C	TP1	B- 3A
Q213	B- 2C	R131	A- 3B	R326	B- 1C	TP101	B- 3E
Q214	A- 2C	R132	A- 3B	R327	B- 1C	TP102	B- 3C
Q215	A- 2B	R133	B- 3C	R328	B- 1C	TP201	B- 3D
Q216	A- 2B	R134	B- 2C	R329	A- 1C	TP202	B- 3B
Q217	B- 2B	R135	B- 2B	R330	A- 1B	TP301	B- 3C
Q218	B- 2C	R136	B- 2B	R331	A- 1B	TP302	B- 3B
Q220	B- 3E	R137	B- 2B	R332	A- 1B		
Q301	A- 1D	R138	B- 2B	R333	B- 1C	S1	A- 3E
Q302	A- 1D	R139	B- 2B	R334	B- 1C		
Q303	A- 2D	R141	B- 3E	R335	B- 1B	CP7	B- 2A
Q304	A- 2D	R142	B- 2D	R340	A- 1C	CP8	A- 3A
Q305	B- 1D	R143	B- 3C	R341	B- 2E	CP10	A- 1E
Q306	B- 1D	R201	A- 2D	R342	B- 1D	CP11	A- 1E
Q307	B- 1C	R202	A- 2D	R343	B- 1B	CP13	B- 2E
Q308	B- 2C	R203	A- 2D			CP15	B- 2E
Q309	A- 1C	R204	A- 2D	VR1	B- 3C	CP20	A- 1C
Q310	A- 1C	R205	A- 2D	VR2	B- 3C	CP22	A- 1A
Q311	B- 1C	R206	A- 2D	VR101	B- 3E	CP23	A- 1A
Q312	B- 1C	R207	B- 2D	VR102	B- 3E	CP24	A- 1A
Q313	B- 1C	R208	B- 2D	VR201	B- 3E	CP25	A- 1A
Q314	A- 1C	R209	B- 2D	VR202	B- 3D	CP26	B- 3A
Q315	A- 1B	R210	B- 2D	VR301	B- 3D	CP27	A- 1A
Q316	A- 1B	R211	B- 2D	VR302	B- 3D		
Q317	B- 2B	R212	B- 2D			CN5	A- 1D
Q318	B- 2C	R213	B- 2D	C1	A- 2D	CN6	A- 2A
Q320	B- 3E	R214	B- 2C	C2	B- 2D	CN7	A- 3D
		R215	B- 2C	C3	B- 3B	CN8	A- 2E
D101	B- 2D	R216	A- 2C	C4	A- 1C	CN9	A- 1A
D102	B- 2C	R217	A- 2C	C5	A- 1C	CN10	A- 2B
D201	B- 2D	R218	A- 2C	C6	B- 1D	CN24	A- 3C
D202	B- 2C	R219	A- 2C	C7	A- 1D		
D301	B- 1D	R220	A- 2C	C8	A- 1D		
D302	B- 1C	R221	B- 2C	C9	A- 2A		
		R222	A- 2D	C10	A- 3A		
R2	A- 1E	R223	B- 2C	C11	A- 1A		

– Side A –

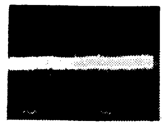


– Side B –

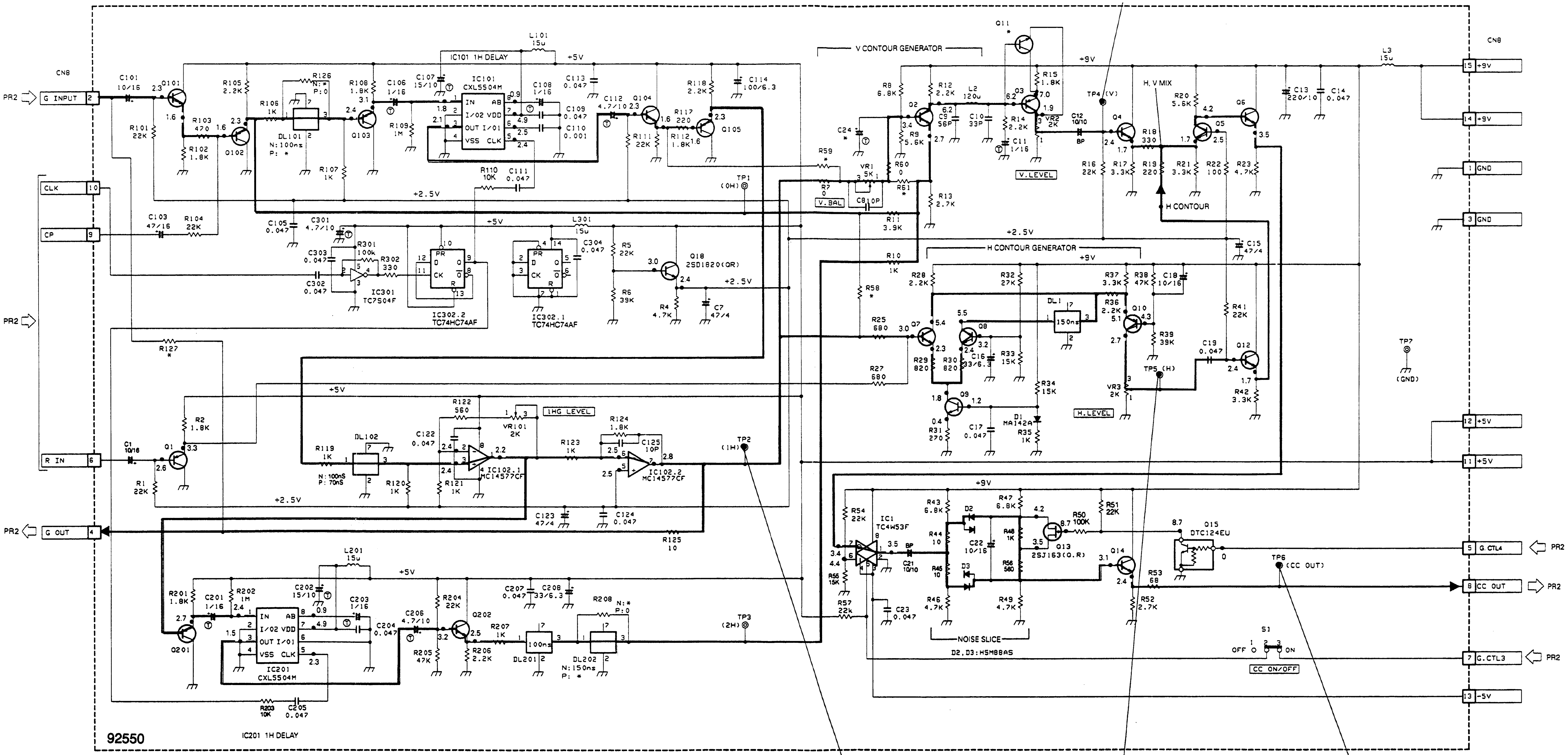


4.20 CC BOARD SCHEMATIC DIAGRAM 07

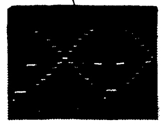
GRAY SCALE CHART



V-rate
150 mVp-p

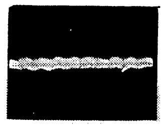

CN8
PR2
G INPUT
CLK
CP
R IN
G OUT
C101 10/16
Q101
R101 22K
R102 1.8K
R103 470
Q102
R105 2.2K
R106 1K
R126 N:* P:0
DL101 N:100ns P:*
R107 1K
R108 1.8K
C106 1/16
Q103
C107 15/10
IC101 1H DELAY
IC101 CXL5504M
L101 15u
+5V
C108 1/16
C109 0.047
C110 0.001
C113 0.047
R109 1M
R110 10K
C111 0.047
C112 4.7/10
Q104
R111 22K
R117 220
R112 1.8K
R118 2.2K
C114 100/6.3
Q105
TP1 (0H)
+2.5V
C103 47/16
R104 22K
C105 0.047
C301 4.7/10
C303 0.047
C302 0.047
R301 100k
R302 330
IC301 TC7S04F
IC302.2 TC74HC74AF
IC302.1 TC74HC74AF
L301 15u
C304 0.047
R5 22K
R6 39K
R4 4.7K
Q18 2SD1820(QR)
C7 47/4
R127 *
+5V
R2 1.8K
C1 10/16
Q1
R1 22K
R119 1K
DL102 N:100nS P:70nS
C122 0.047
R122 560
VR101 2K
IHG LEVEL
R120 1K
R121 1K
IC102.1 MC14577CF
R123 1K
R124 1.8K
C125 10P
IC102.2 MC14577CF
TP2 (1H)
C123 47/4
C124 0.047
R125 10
L201 15u
R201 1.8K
C201 1/16
R202 1M
Q201
C202 15/10
C203 1/16
C204 0.047
IC201 CXL5504M
C206 4.7/10
R204 22K
R205 47K
Q202
R206 2.2K
R207 1K
C207 0.047
C208 33/6.3
DL201 100ns
R208 N:* P:0
DL202 N:150ns P:*
TP3 (2H)
R203 10K
C205 0.047
92550
IC201 1H DELAY
V CONTOUR GENERATOR
Q11 *
+9V
R8 6.8K
R12 2.2K
L2 120u
Q2
C9 56P
C10 33P
R9 5.6K
Q3
R15 1.8K
R14 2.2K
C11 1/16
VR2 2K
V.LEVEL
C24 *
R59 *
R7 0
VR1 5K
R60 0
R61 *
V.BAL
C8 10P
R11 3.9K
R13 2.7K
TP4 (V)
C12 10/10 BP
Q4
R16 22K
R17 3.3K
R18 330
R19 220
H.V MIX
R20 5.6K
Q5
R21 3.3K
R22 100
Q6
R23 4.7K
H CONTOUR
C13 220/10
C14 0.047
L3 15u
+2.5V
H CONTOUR GENERATOR
R10 1K
R58 *
R28 2.2K
R32 27K
R37 3.3K
R38 47K
C18 10/16
C15 47/4
R25 680
Q7
Q8
DL1 150ns
R36 2.2K
Q10
R39 39K
R41 22K
R27 680
R29 820
R30 820
C16 33/6.3
R33 15K
R34 15K
C19 0.047
Q12
TP5 (H)
VR3 2K
R42 3.3K
H.LEVEL
Q9
R31 270
C17 0.047
D1 MA142A
R35 1K
TP7 (GND)
+9V
R54 22K
IC1 TC4W53F
R43 6.8K
D2
R47 6.8K
R51 22K
R50 100K
Q13 2SJ163(Q.R)
Q15 DTC124EU
R44 10
C22 10/16
R48 1K
R56 560
C21 10/10 BP
R45 10
D3
Q14
R53 68
R55 15K
R57 22k
C23 0.047
R46 4.7K
R49 4.7K
R52 2.7K
NOISE SLICE
D2,D3:HSM88AS
TP6 (CC OUT)
S1
OFF ON
CC ON/OFF
+9V
-9V
GND
GND
+5V
+5V
G.CTL4
CC OUT
G.CTL3
-5V

NOTE
1.UNLESS OTHER WISE SPECIFIED
NPN TRANSISTORS : 2SC3930(BC)
PNP TRANSISTORS : 2SA1532(BC)
2.PARTS WITH * MARK ARE OPEN CIRCUITS.



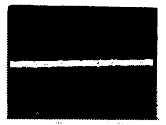
H-rate
1.0 Vp-p

GRAY SCALE CHART



H-rate
150 mVp-p

GRAY SCALE CHART



H-Rate
0.7 Vp-p

Revised in Feb. 1996.

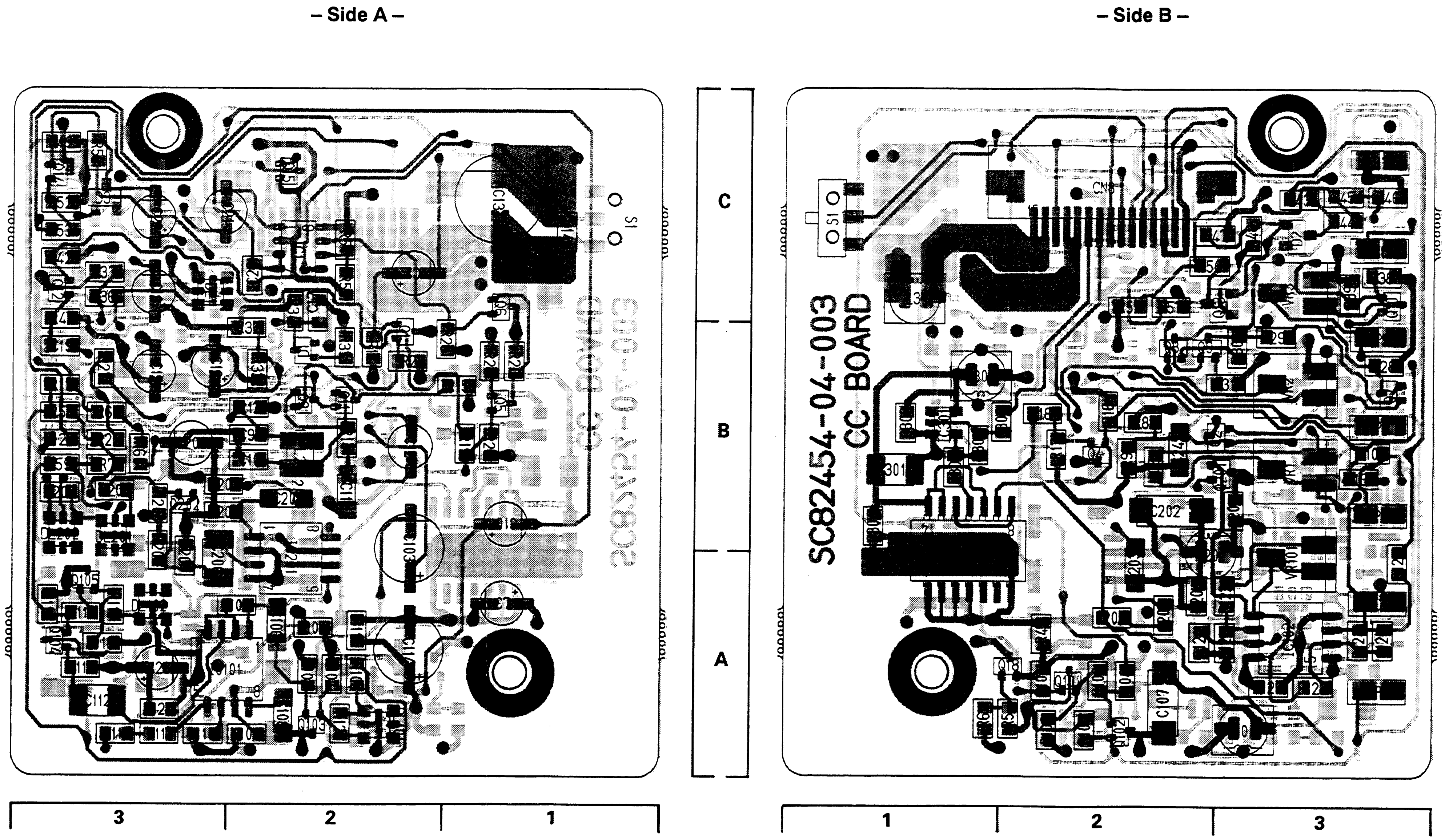
4.21 CC CIRCUIT BOARD

● ADDRESS TABLE OF BOARD PARTS

Each address may have an address error by one interval.

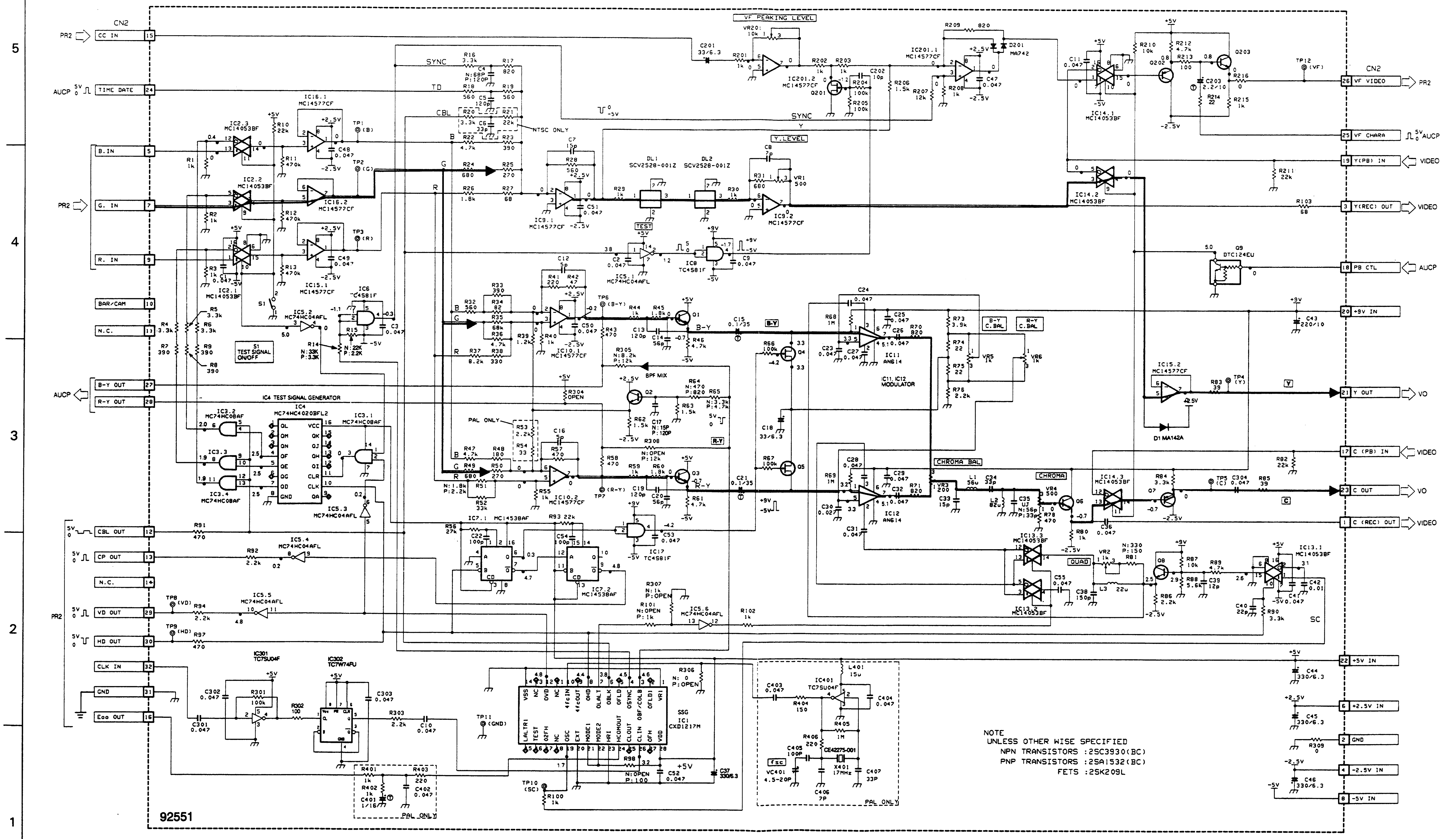
A-1C
Side — Y axis
X axis

IC1	A- 2C
IC101	A- 2A
IC102	B- 3A
IC201	A- 2B
IC301	B- 1B
IC302	B- 1B
Q1	A- 2B
Q2	B- 3B
Q3	A- 2B
Q4	B- 2B
Q5	A- 1B
Q6	A- 1C
Q7	B- 3B
Q8	B- 2B
Q9	B- 2B
Q10	B- 3C
Q11	A- 2B
Q12	A- 3C
Q13	B- 3C
Q14	A- 3C
Q15	A- 2C
Q18	B- 2A
Q101	B- 2A
Q102	B- 2A
Q103	A- 2A
Q104	A- 3A
Q105	A- 3A
Q201	B- 3B
Q202	A- 3B
D1	A- 2B
D2	B- 3C
D3	A- 3C
R1	A- 2B
R2	A- 2B
R4	B- 2A
R5	B- 2A
R6	B- 1A
R7	A- 3B
R8	B- 2B
R9	B- 2B
R10	B- 3B
R11	A- 3B
R12	A- 2B
R13	B- 3B
R14	A- 2B
R15	A- 1B
R16	B- 2B
R17	B- 2B
R18	B- 2B
R19	A- 1B
R20	A- 1B
R21	A- 1B
R22	A- 1B
R23	A- 2B
R25	A- 3B
R27	A- 3B
R28	B- 3B
R29	B- 3B
R30	B- 3B
R31	B- 3B
R32	A- 2C
R33	A- 2B
R34	A- 2C
R35	A- 2B
R36	A- 3C
R37	A- 3C
R38	B- 3C
R39	B- 3C
R41	A- 3C
R42	A- 3C
R43	B- 3C
R44	B- 3C
R45	B- 3C
R46	B- 3C
R47	B- 3C
R48	B- 3C
R49	A- 3C
R50	B- 2C
R51	B- 2C
R52	A- 3C
R53	A- 3C
R54	A- 2C
R55	A- 2C
R56	A- 3C
R57	B- 2C
R58	A- 3B
R59	A- 3B
R60	A- 3B
R61	A- 3B
R101	B- 2A
R102	B- 2A
R103	B- 2A
R104	B- 2A
R105	B- 2A
R106	A- 2A
R107	A- 2A
R108	A- 2A
R109	A- 2A
R110	A- 3A
R111	A- 3A
R112	A- 3A
R117	A- 3A
R118	A- 3A
R119	A- 3A
R120	B- 2A
R121	B- 3A
R122	B- 3A
R123	B- 3A
R124	B- 3A
R125	B- 3A
R126	A- 2A
R127	A- 3B
R201	A- 3B
R202	A- 3B
R203	B- 2A
R204	A- 3B
R205	A- 3B
R206	A- 3B
R207	A- 3B
R208	A- 3B
R302	B- 1B
VR1	B- 3B
VR2	B- 3B
VR3	B- 3C
VR101	B- 3B
C1	A- 2C
C7	A- 1A
C8	B- 2B
C9	A- 2B
C10	A- 2B
C11	A- 2B
C12	A- 2B
C13	A- 1C
C14	A- 1C
C15	A- 3B
C16	A- 3B
C17	A- 2C
C18	A- 3C
C19	A- 3B
C21	A- 3C
C22	A- 3C
C23	A- 2C
C24	B- 2B
C101	A- 1B
C103	A- 2B
C105	A- 2A
C106	A- 2A
C107	B- 2A
C108	A- 2A
C109	A- 2A
C110	A- 3A
C111	A- 3A
C112	A- 3A
C113	A- 2A
C114	A- 2A
C122	B- 3A
C123	A- 3A
C124	A- 3A
C125	B- 3A
C201	A- 2B
C202	B- 2B
C203	B- 2A
C204	B- 2A
C205	B- 2A
C206	A- 3B
C207	B- 3B
C208	A- 3B
C301	B- 1B
C303	B- 1B
C304	B- 1B
L2	A- 2B
L3	B- 1C
L101	B- 3A
L201	B- 2B
L301	B- 1B
DL1	A- 3C
DL101	A- 2A
DL102	A- 3A
DL201	A- 3B
DL202	A- 3B
TP1	B- 3A
TP2	B- 3A
TP3	B- 3B
TP4	B- 3B
TP5	B- 3B
TP6	B- 3C
TP7	B- 3C
S1	B- 1C
CN8	B- 2C


– Side A –

– Side B –

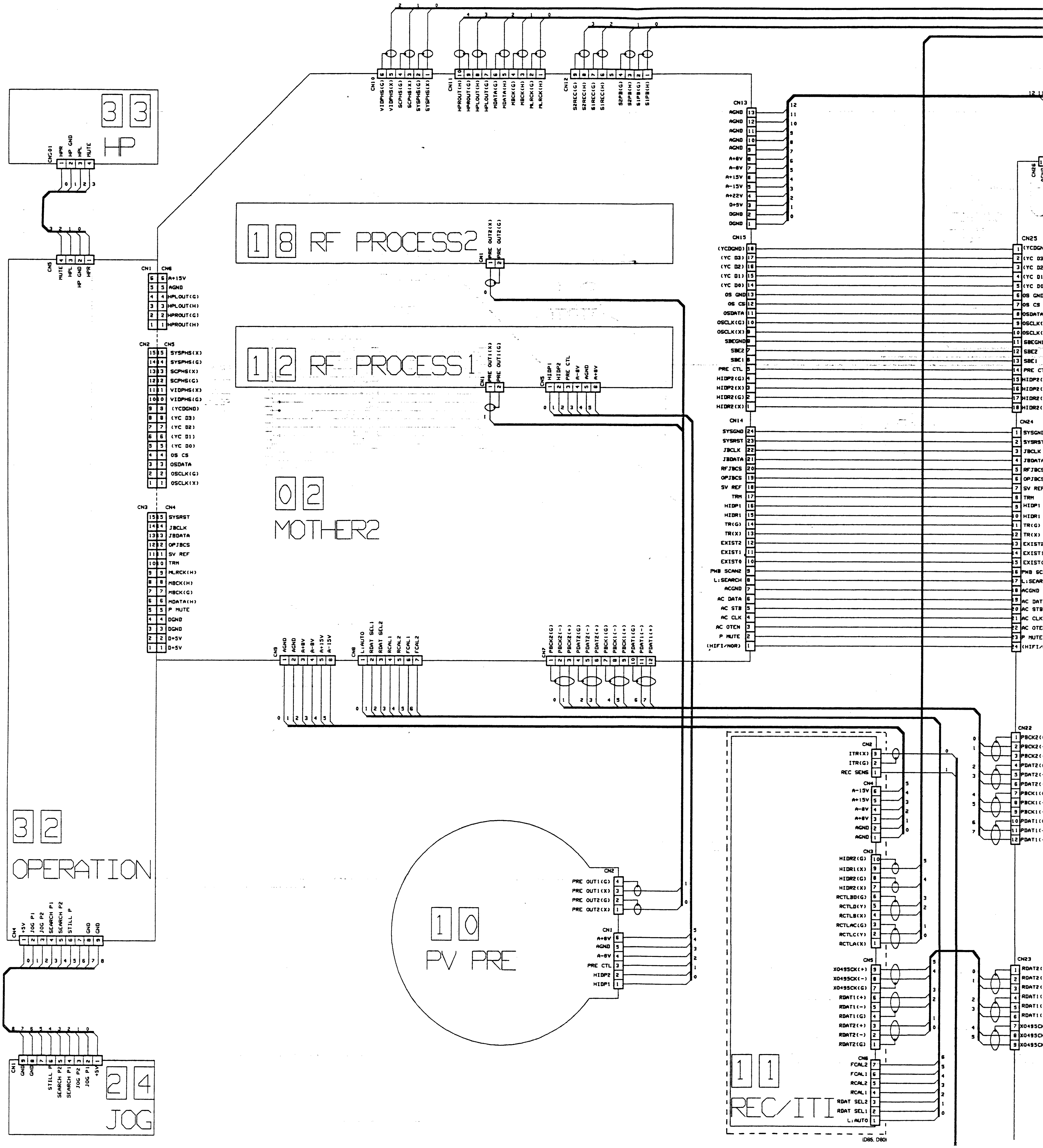
4.22 SE BOARD SCHEMATIC DIAGRAM 0 8


6
5
4
3
2
1
CN2
PR2
CC IN
AUCP
TIME DATE
B.IN
G. IN
R. IN
BAR/CAM
N.C.
B-Y OUT
R-Y OUT
CBL OUT
CP OUT
VD OUT
HD OUT
CLK IN
GND
Eoo OUT
VF PEAKING LEVEL
VR201 10k
IC201.1 MC14577CF
IC201.2 MC14577CF
Q201
D201 MA742
IC14.1 MC14053BF
Q202
Q203
TP12 (VF)
VF VIDEO
VF CHARA
Y(PB) IN
VIDEO
IC14.2 MC14053BF
Y(REC) OUT
PB CTL
Q9 DTC124EU
+9V IN
IC15.2 MC14577CF
TP4 (Y)
Y OUT
VO
D1 MA142A
C (PB) IN
C OUT
C (REC) OUT
+5V IN
+2.5V IN
GND
-2.5V IN
-5V IN
SYNC
TD
CBL
NTSC ONLY
IC16.1 MC14577CF
IC16.2 MC14577CF
IC15.1 MC14577CF
IC2.3 MC14053BF
IC2.2 MC14053BF
IC2.1 MC14053BF
TP1 (B)
TP2 (G)
TP3 (R)
Y.LEVEL
DL1 SCV2528-001Z
DL2 SCV2528-001Z
IC9.1 MC14577CF
IC9.2 MC14577CF
VR1 500
TEST
IC5.1 MC74HC04AFL
IC8 TC4S81F
S1
TEST SIGNAL ON/OFF
IC5.2 MC74HC04AFL
IC6 TC4S81F
TP6 (B-Y)
IC10.1 MC14577CF
Q1
B-Y
BPF MIX
Q2
R-Y
IC4 TEST SIGNAL GENERATOR
IC4 MC74HC4020BFL2
IC3.2 MC74HC08AF
IC3.3
IC3.4 MC74HC08AF
IC3.1 MC74HC08AF
IC5.3 MC74HC04AFL
PAL ONLY
IC10.2 MC14577CF
TP7 (R-Y)
Q3
IC7.1 MC14538AF
IC7.2 MC14538AF
IC17 TC4S81F
IC5.4 MC74HC04AFL
IC5.5 MC74HC04AFL
IC5.6 MC74HC04AFL
TP8 (VD)
TP9 (HD)
IC301 TC7SU04F
IC302 TC7W74FU
TP11 (GND)
TP10 (SC)
SSG IC1 CXD1217M
IC401 TC7SU04F
X401 17MHz
CE42275-001
fsc
VC401 4.5-20P
PAL ONLY
Q4
Q5
IC11 AN614
IC12 AN614
IC11, IC12 MODULATOR
B-Y C.BAL
R-Y C.BAL
VR5 1k
VR6 1k
CHROMA BAL
CHROMA
VR4 500
Q6
Q7
TP5 (C)
IC14.3 MC14053BF
IC13.3 MC14053BF
IC13.2 MC14053BF
IC13.1 MC14053BF
QUAD
VR2 1k
Q8
SC
92551
A
B
C
D
E
F
G
H

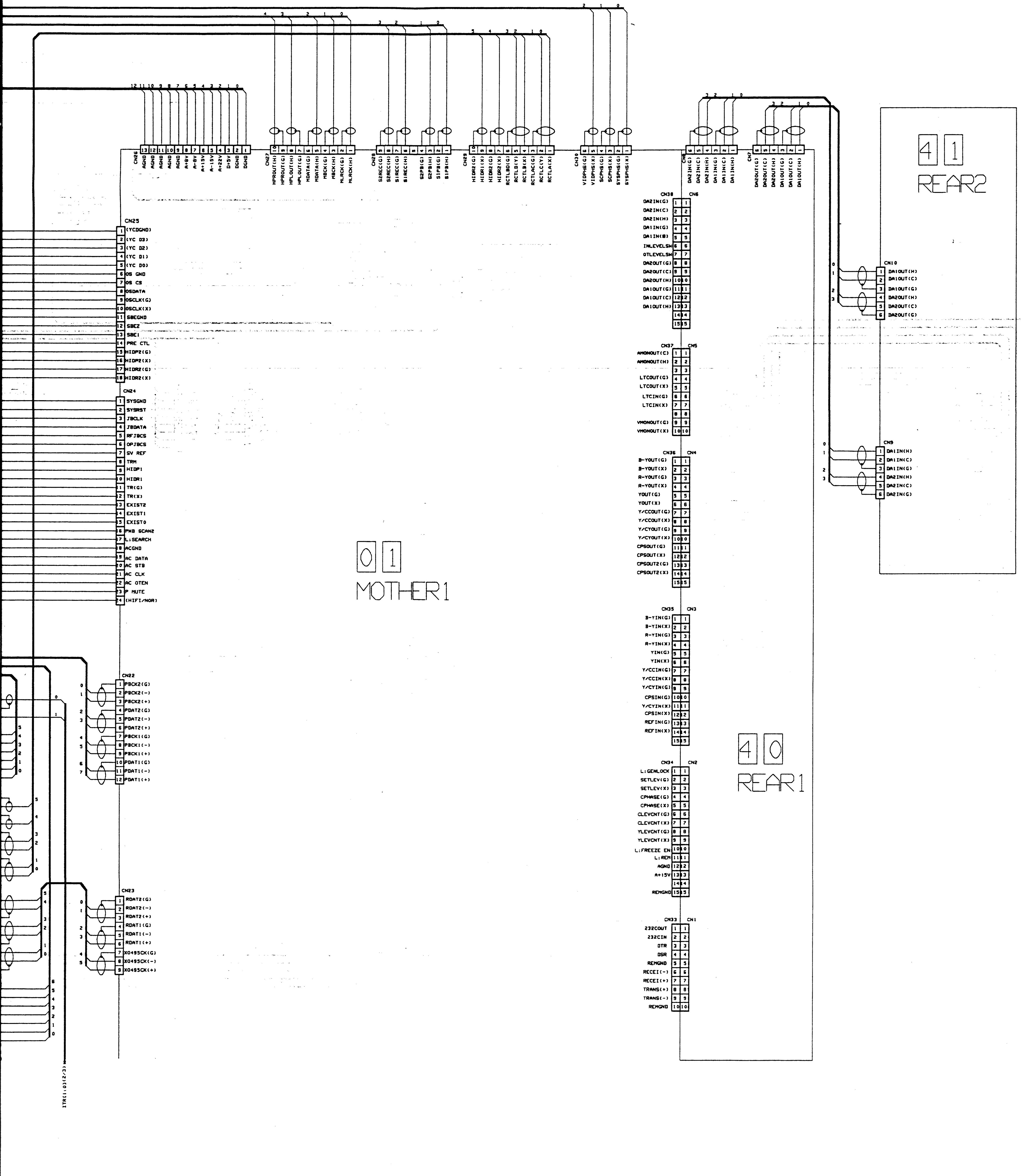
NOTE
UNLESS OTHER WISE SPECIFIED
NPN TRANSISTORS :2SC3930(BC)
PNP TRANSISTORS :2SA1532(BC)
FETS :2SK209L

Revised in Feb. 1996.

— DIAGRAM 2/3 —

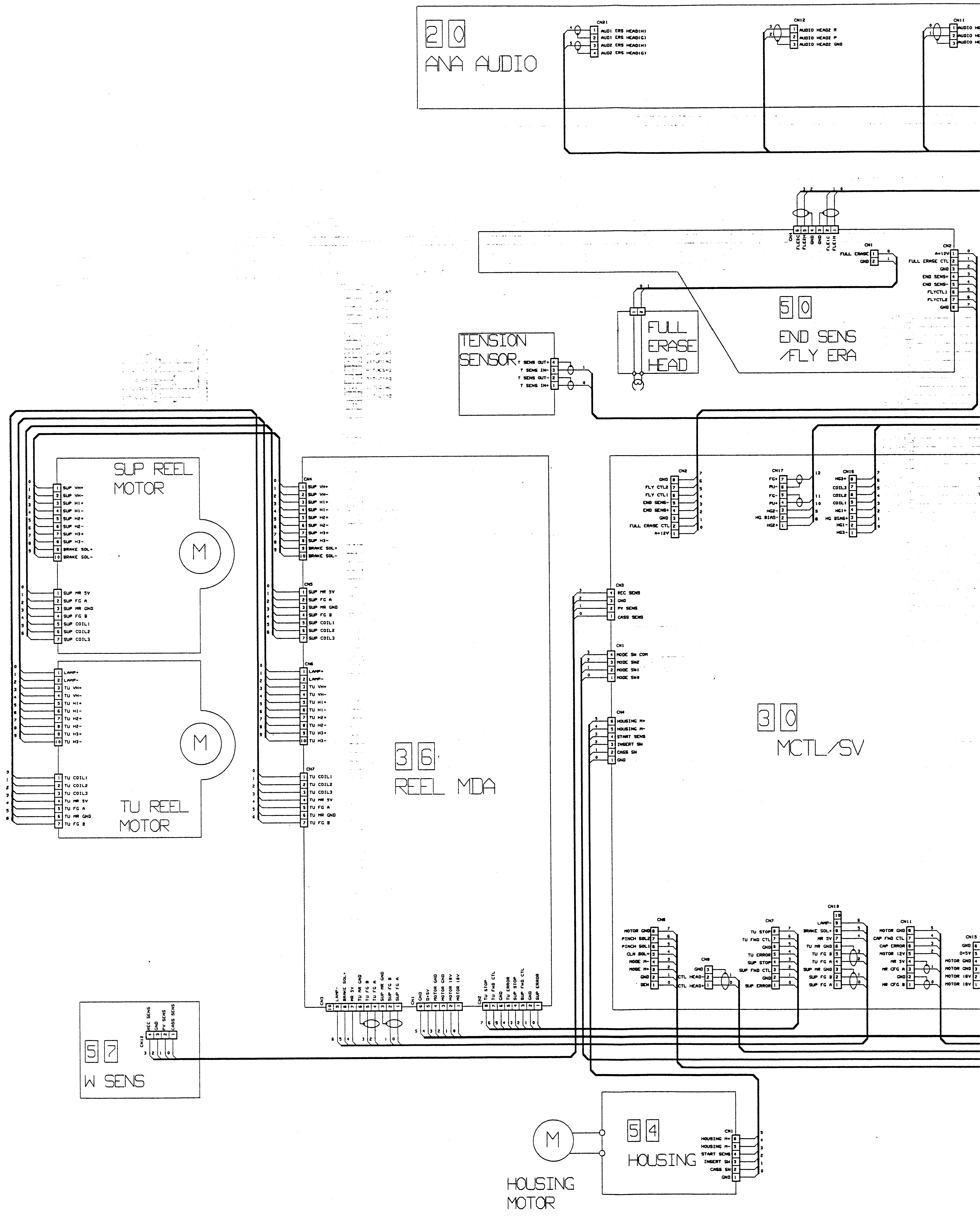


33 HP
CN901 HPR HP GND HPL MUTE
CN5 MUTE HPL HP GND HPR
18 RF PROCESS2
CN1 PRE OUT2(X) PRE OUT2(G)
12 RF PROCESS1
CN1 PRE OUT1(X) PRE OUT1(G)
CN5 HIDP1 HIDP2 PRE CTL A-8V AGND A+8V
02 MOTHER2
CN10 VIDPHS(G) VIDPHS(X) SCPHS(G) SCPHS(X) SYSPHS(G) SYSPHS(X)
CN11 HPROUT(H) HPROUT(G) HPLOUT(H) HPLOUT(G) MDATA(G) MDATA(H) MBCK(G) MBCK(H) MLRCK(G) MLRCK(H)
CN12 S2REC(G) S2REC(H) S1REC(G) S1REC(H) S2PB(G) S2PB(H) S1PB(G) S1PB(H)
CN13 AGND AGND AGND AGND AGND A+8V A-8V A+15V A-15V A+22V D+5V DGND DGND
CN15 (YCDGND) (YC D3) (YC D2) (YC D1) (YC D0) OS GND OS CS OSDATA OSCLK(G) OSCLK(X) SBEGND SBE2 SBE1 PRE CTL HIDP2(G) HIDP2(X) HIDR2(G) HIDR2(X)
CN14 SYSGND SYSRST JBCLK JBDATA RFJBCS OPJBCS SV REF TRM HIDP1 HIDR1 TR(G) TR(X) EXIST2 EXIST1 EXIST0 PWB SCAN2 L:SEARCH ACGND AC DATA AC STB AC CLK AC OTEN P MUTE (HIFI/NOR)
CN1 CN6 A+15V AGND HPLOUT(G) HPLOUT(H) HPROUT(G) HPROUT(H)
CN2 CN5 SYSPHS(X) SYSPHS(G) SCPHS(X) SCPHS(G) VIDPHS(X) VIDPHS(G) (YCDGND) (YC D3) (YC D2) (YC D1) (YC D0) OS CS OSDATA OSCLK(G) OSCLK(X)
CN3 CN4 SYSRST JBCLK JBDATA OPJBCS SV REF TRM MLRCK(H) MBCK(H) MBCK(G) MDATA(H) P MUTE DGND DGND D+5V D+5V
CN9 AGND AGND A+8V A-8V A+15V A-15V
CN8 L:AUTO RDAT SEL1 RDAT SEL2 RCAL1 RCAL2 FCAL1 FCAL2
CN7 PBCK2(G) PBCK2(+) PBCK2(-) PDAT2(G) PDAT2(+) PDAT2(-) PBCK1(G) PBCK1(+) PBCK1(-) PDAT1(G) PDAT1(-) PDAT1(+)
32 OPERATION
CN4 +5V JOG P1 JOG P2 SEARCH P1 SEARCH P2 STILL P GND GND
24 JOG
CN1 GND GND STILL P SEARCH P2 SEARCH P1 JOG P2 JOG P1 +5V
10 PV PRE
CN2 PRE OUT1(G) PRE OUT1(X) PRE OUT2(G) PRE OUT2(X)
CN1 A+8V AGND A-8V PRE CTL HIDP2 HIDP1
11 REC/ITI
CN2 ITR(X) ITR(G) REC SENS
CN4 A-15V A+15V A-8V A+8V AGND AGND
CN3 HIDR2(G) HIDR1(X) HIDR2(G) HIDR2(X) RCTLBD(G) RCTLD(Y) RCTLB(X) RCTLAC(G) RCTLC(Y) RCTLA(X)
CN5 X0495CK(+) X0495CK(-) X0495CK(G) RDAT1(+) RDAT1(-) RDAT1(G) RDAT2(+) RDAT2(-) RDAT2(G)
CN6 FCAL2 FCAL1 RCAL2 RCAL1 RDAT SEL2 RDAT SEL1 L:AUTO
(D85, D80)
ITR(1:0)(2/3)
CN26
CN25 (YCDGN (YC D3 (YC D2 (YC D1 (YC D0 OS GND OS CS OSDATA OSCLK(OSCLK(SBEGN SBE2 SBE1 PRE CT HIDP2(HIDP2(HIDR2(HIDR2(
CN24 SYSGN SYSRST JBCLK JBDATA RFJBCS OPJBCS SV REF TRM HIDP1 HIDR1 TR(G) TR(X) EXIST2 EXIST1 EXIST0 PWB SC L:SEAR ACGND AC DAT AC STB AC CLK AC OTE P MUTE (HIFI/
CN22 PBCK2(PBCK2(PBCK2(PDAT2(PDAT2(PDAT2(PBCK1(PBCK1(PBCK1(PDAT1(PDAT1(PDAT1(
CN23 RDAT2(RDAT2(RDAT2(RDAT1(RDAT1(RDAT1(X0495C X0495C X0495C

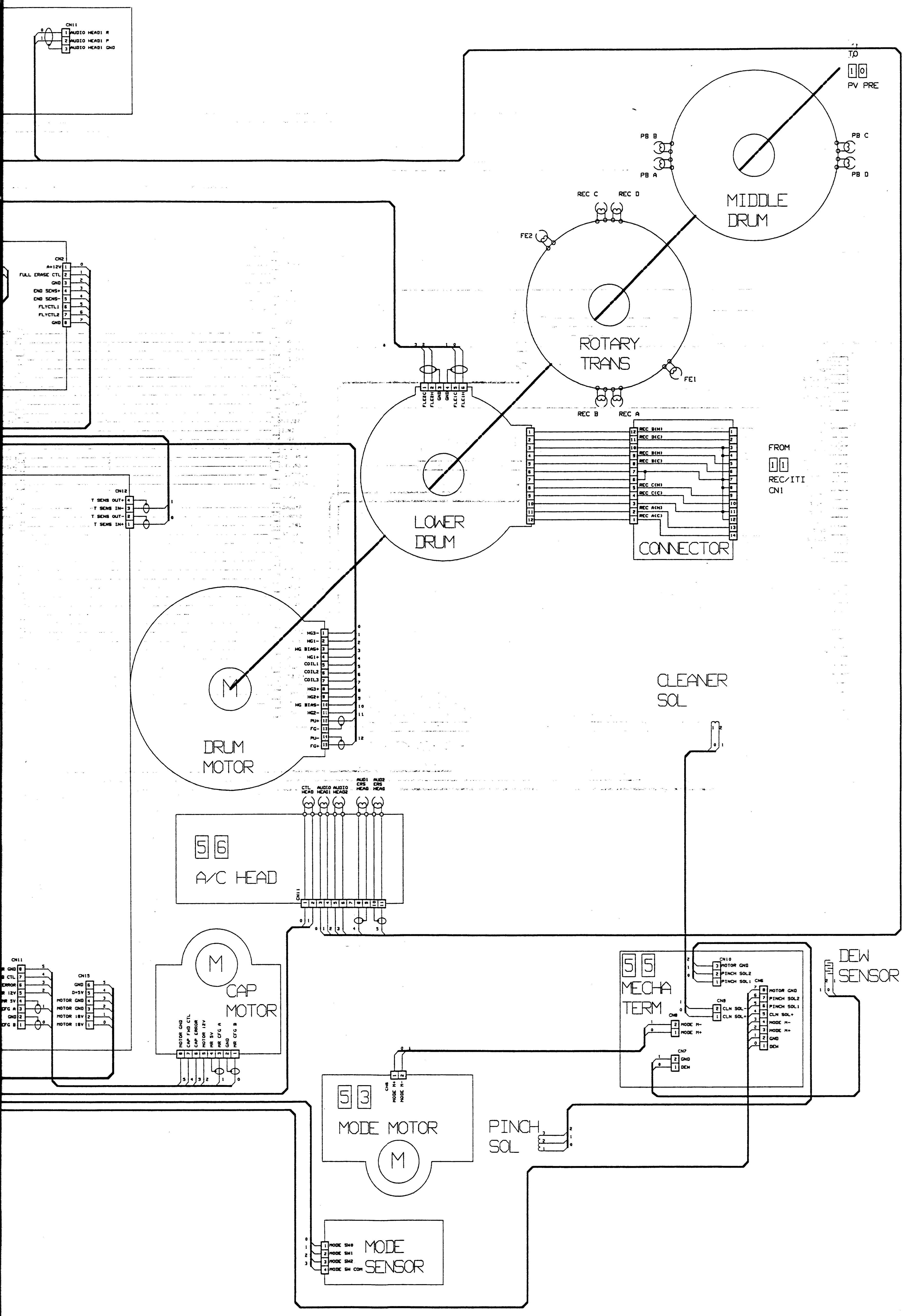


0 1
MOTHER1
4 0
REAR1
4 1
REAR2
CN26
AGND
AGND
AGND
AGND
A+8V
A+8V
A-15V
A-15V
A+22V
D+5V
DGND
DGND
CN27
HPROUT(H)
HPROUT(G)
HPLOUT(H)
HPLOUT(G)
MDATA(G)
MDATA(H)
MBCK(G)
MBCK(H)
MLRCK(G)
MLRCK(H)
CN28
S2REC(G)
S2REC(H)
S1REC(G)
S1REC(H)
S2PB(G)
S2PB(H)
S1PB(G)
S1PB(H)
CN29
HIDR2(G)
HIDR1(X)
HIDR2(G)
HIDR2(X)
RCTLBD(G)
RCTLB(Y)
RCTLB(X)
RCTLAC(G)
RCTLC(Y)
RCTLA(X)
CN30
VIDPHS(G)
VIDPHS(X)
SCPHS(G)
SCPHS(X)
SYSPHS(G)
SYSPHS(X)
CN8
DA2IN(G)
DA2IN(C)
DA2IN(H)
DA1IN(G)
DA1IN(C)
DA1IN(H)
CN7
DA2OUT(G)
DA2OUT(C)
DA2OUT(H)
DA1OUT(G)
DA1OUT(C)
DA1OUT(H)
CN25
(YCDGND)
(YC D3)
(YC D2)
(YC D1)
(YC D0)
OS GND
OS CS
OSDATA
OSCLK(G)
OSCLK(X)
SBEGND
SBE2
SBE1
PRE CTL
HIDP2(G)
HIDP2(X)
HIDR2(G)
HIDR2(X)
CN24
SYSGND
SYSRST
JBCLK
JBDATA
RFJBCS
OPJBCS
SV REF
TRM
HIDP1
HIDR1
TR(G)
TR(X)
EXIST2
EXIST1
EXIST0
PHB SCAN2
L:SEARCH
ACGND
AC DATA
AC STB
AC CLK
AC OTEN
P MUTE
(HIFI/NOR)
CN22
PBCK2(G)
PBCK2(-)
PBCK2(+)
PDAT2(G)
PDAT2(-)
PDAT2(+)
PBCK1(G)
PBCK1(-)
PBCK1(+)
PDAT1(G)
PDAT1(-)
PDAT1(+)
CN23
RDAT2(G)
RDAT2(-)
RDAT2(+)
RDAT1(G)
RDAT1(-)
RDAT1(+)
X0495CK(G)
X0495CK(-)
X0495CK(+)
ITR(1:0)(2/3)
CN38 CN6
DA2IN(G)
DA2IN(C)
DA2IN(H)
DA1IN(G)
DA1IN(B)
INLEVELSW
OTLEVELSW
DA2OUT(G)
DA2OUT(C)
DA2OUT(H)
DA1OUT(G)
DA1OUT(C)
DA1OUT(H)
CN37 CN5
AMONOUT(C)
AMONOUT(H)
LTCOUT(G)
LTCOUT(X)
LTCIN(G)
LTCIN(X)
VMONOUT(G)
VMONOUT(X)
CN36 CN4
B-YOUT(G)
B-YOUT(X)
R-YOUT(G)
R-YOUT(X)
YOUT(G)
YOUT(X)
Y/CCOUT(G)
Y/CCOUT(X)
Y/CYOUT(G)
Y/CYOUT(X)
CPSOUT(G)
CPSOUT(X)
CPSOUT2(G)
CPSOUT2(X)
CN35 CN3
B-YIN(G)
B-YIN(X)
R-YIN(G)
R-YIN(X)
YIN(G)
YIN(X)
Y/CCIN(G)
Y/CCIN(X)
Y/CYIN(G)
CPSIN(G)
Y/CYIN(X)
CPSIN(X)
REFIN(G)
REFIN(X)
CN34 CN2
L:GENLOCK
SETLEV(G)
SETLEV(X)
CPHASE(G)
CPHASE(X)
CLEVCNT(G)
CLEVCNT(X)
YLEVCNT(G)
YLEVCNT(X)
L:FREEZE EN
L:REM
AGND
A+15V
REMGND
CN33 CN1
232COUT
232CIN
DTR
DSR
REMGND
RECEI(-)
RECEI(+)
TRANS(+)
TRANS(-)
REMGND
CN10
DA1OUT(H)
DA1OUT(C)
DA1OUT(G)
DA2OUT(H)
DA2OUT(C)
DA2OUT(G)
CN9
DA1IN(H)
DA1IN(C)
DA1IN(G)
DA2IN(H)
DA2IN(C)
DA2IN(G)

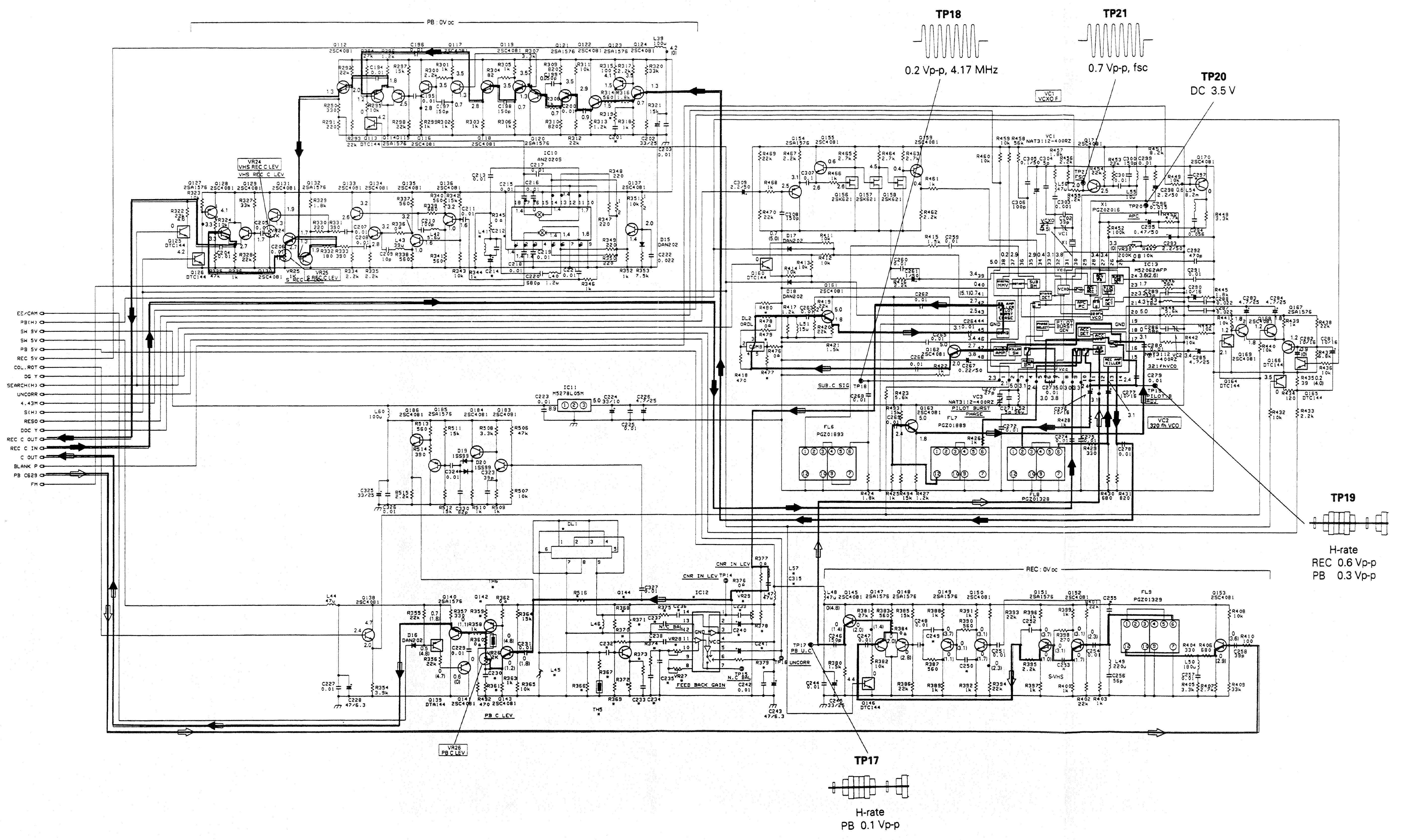
— DIAGRAM 3/3 —



20
ANA AUDIO
CN31
AUD1 ERS HEAD(H)
AUD1 ERS HEAD(C)
AUD2 ERS HEAD(H)
AUD2 ERS HEAD(C)
CN12
AUDIO HEAD2 R
AUDIO HEAD2 P
AUDIO HEAD2 GND
CN11
50
END SENS
/FLY ERA
CN1
FULL ERASE
GND
CN2
A+12V
FULL ERASE CTL
GND
END SENS+
END SENS-
FLYCTL1
FLYCTL2
GND
FULL
ERASE
HEAD
TENSION
SENSOR
T SENS OUT+
T SENS IN-
T SENS OUT-
T SENS IN+
SUP REEL
MOTOR
SUP VH+
SUP VH-
SUP H1+
SUP H1-
SUP H2+
SUP H2-
SUP H3+
SUP H3-
BRAKE SOL+
BRAKE SOL-
SUP MR 5V
SUP FG A
SUP MR GND
SUP FG B
SUP COIL1
SUP COIL2
SUP COIL3
M
LAMP+
LAMP-
TU VH+
TU VH-
TU H1+
TU H1-
TU H2+
TU H2-
TU H3+
TU H3-
TU COIL1
TU COIL2
TU COIL3
TU MR 5V
TU FG A
TU MR GND
TU FG B
TU REEL
MOTOR
CN4
CN5
CN6
CN7
36
REEL MDA
CN3
CN1
CN2
30
MCTL/SV
CN2
GND
FLY CTL2
FLY CTL1
END SENS-
END SENS+
GND
FULL ERASE CTL
A+12V
CN17
CN16
CN3
REC SENS
GND
PV SENS
CASS SENS
CN1
MODE SW COM
MODE SW2
MODE SW1
MODE SW0
CN4
HOUSING M+
HOUSING M-
START SENS
INSERT SW
CASS SW
GND
CN8
MOTOR GND
PINCH SOL2
PINCH SOL1
CLN SOL+
MODE M-
MODE M+
GND
SEN
CN9
CTL HEAD-
CTL HEAD+
CN7
TU STOP
TU FWD CTL
TU ERROR
SUP STOP
SUP FWD CTL
SUP ERROR
CN10
CN11
CN13
57
W SENS
CN12
REC SENS
GND
PV SENS
CASS SENS
54
HOUSING
HOUSING
MOTOR
CN1
HOUSING M+
HOUSING M-
START SENS
INSERT SW
CASS SW
GND

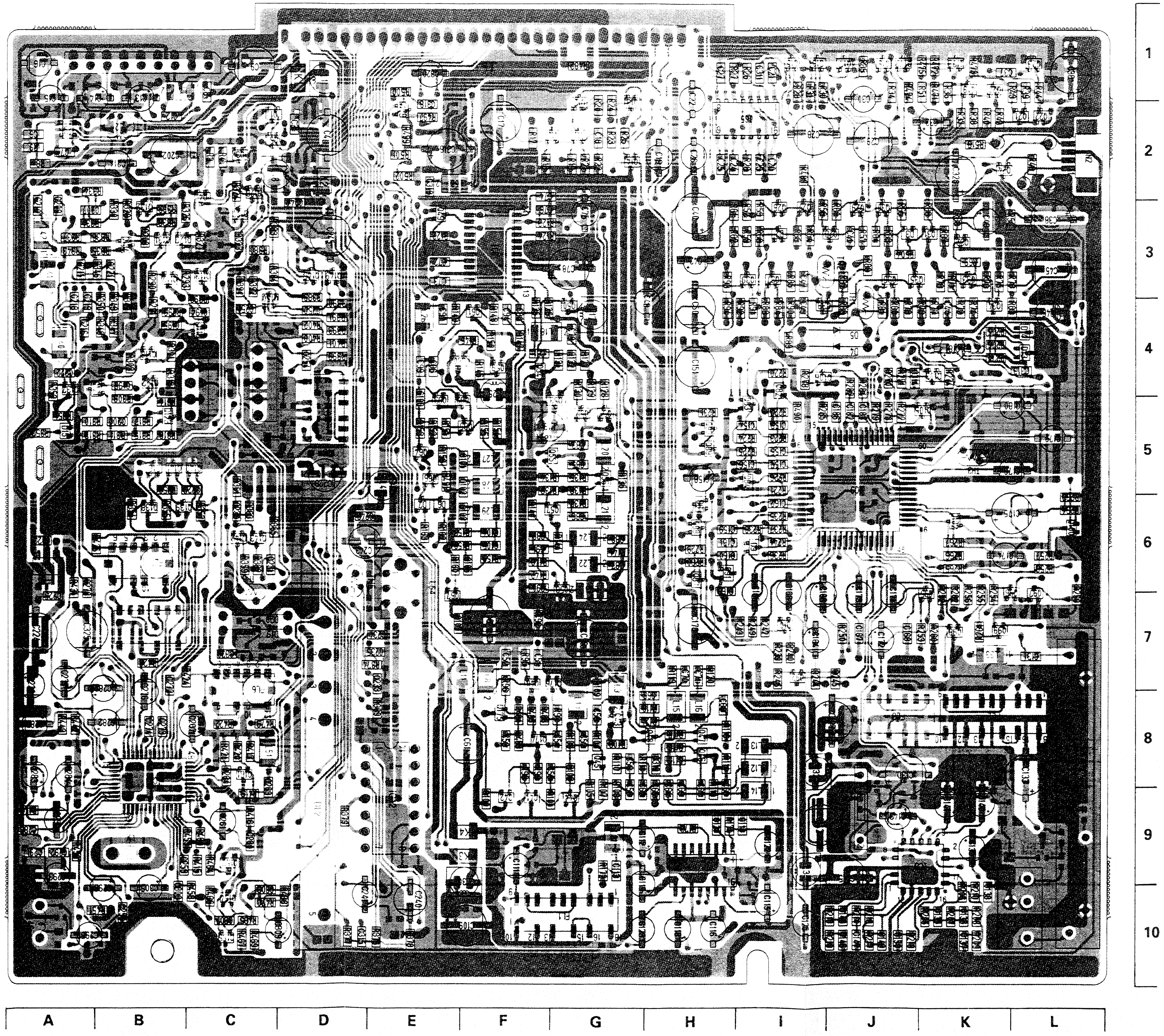

CN11
AUDIO HEAD1 R
AUDIO HEAD1 P
AUDIO HEAD1 GND
T0
10
PV PRE
PB B
PB A
PB C
PB D
MIDDLE DRUM
REC C
REC D
FE2
ROTARY TRANS
FE1
REC B
REC A
CN2
A+12V
FULL ERASE CTL
GND
END SENS+
END SENS-
FLYCTL1
FLYCTL2
GND
FLE2C
FLE2H
GND
GND
FLE1C
FLE1H
LOWER DRUM
REC B(H)
REC B(C)
REC B(H)
REC B(C)
REC C(H)
REC C(C)
REC A(H)
REC A(C)
CONNECTOR
FROM
11
REC/ITI
CN1
CN12
T SENS OUT+
T SENS IN-
T SENS OUT-
T SENS IN+
HG3-
HG1-
HG BIAS+
HG1+
COIL1
COIL2
COIL3
HG3+
HG2+
HG BIAS-
HG2-
PU+
FG-
PU-
FG+
DRUM MOTOR
CLEANER SOL
CTL HEAD
AUDIO HEAD1
AUDIO HEAD2
AUD1 ERS HEAD
AUD2 ERS HEAD
56
A/C HEAD
CN11
CN11
R GND
CTL
ERROR
R 12V
MR 5V
CFG A
GND
CFG B
CN15
GND
D+5V
MOTOR GND
MOTOR GND
MOTOR 18V
MOTOR 18V
CAP MOTOR
MOTOR GND
CAP FWD CTL
CAP ERROR
MOTOR 12V
MR 5V
MR CFG A
GND
MR CFG B
55
MECHA TERM
CN10
MOTOR GND
PINCH SOL2
PINCH SOL1
CN6
MOTOR GND
PINCH SOL2
PINCH SOL1
CLN SOL+
MODE M-
MODE M+
GND
DEW
CN9
CLN SOL-
CLN SOL+
CN8
MODE M-
MODE M+
CN7
GND
DEW
DEW SENSOR
CN5
MODE M+
MODE M-
53
MODE MOTOR
PINCH SOL
MODE SW0
MODE SW1
MODE SW2
MODE SW COM
MODE SENSOR

– VIDEO BOARD SCHEMATIC DIAGRAM (PAL) (2/2) – 09


PB : 0V DC
REC : 0V DC
TP18
0.2 Vp-p, 4.17 MHz
TP21
0.7 Vp-p, fsc
TP20
DC 3.5 V
TP19
H-rate
REC 0.6 Vp-p
PB 0.3 Vp-p
TP17
H-rate
PB 0.1 Vp-p
EE/CAM
PB(H)
SW 9V
SW 5V
PB 5V
REC 5V
COL.ROT
DG Y
SEARCH(H)
UNCORR
4.43M
S(H)
RESO
DOC Y
REC C OUT
REC C IN
C OUT
BLANK P
PB C629
FM
VR24 VHS REC C LEV
VR25 S REC C LEV
VR26 PB C LEV
IC10 AN20205
IC11 M5278L05M
IC12
IC13 M52062AFP
VC1 VCXO F
VC2 320 fH VCO
VC3 PILOT BURST PHASE
X1 PGZ02016
FL6 PGZ01893
FL7 PGZ01889
FL8 PGZ01328
FL9 PGZ01329
DL1
DL2 DRDL
CNR IN LEV
N.C BAL
FEED BACK GAIN
PB C LEV
SUB.C SIG
S-VHS
6
5
4
3
2
1
A
B
C
E
F
G
H

4.25 VIDEO CIRCUIT BOARD

– Side A –



● ADDRESS TABLE OF BOARD PARTS

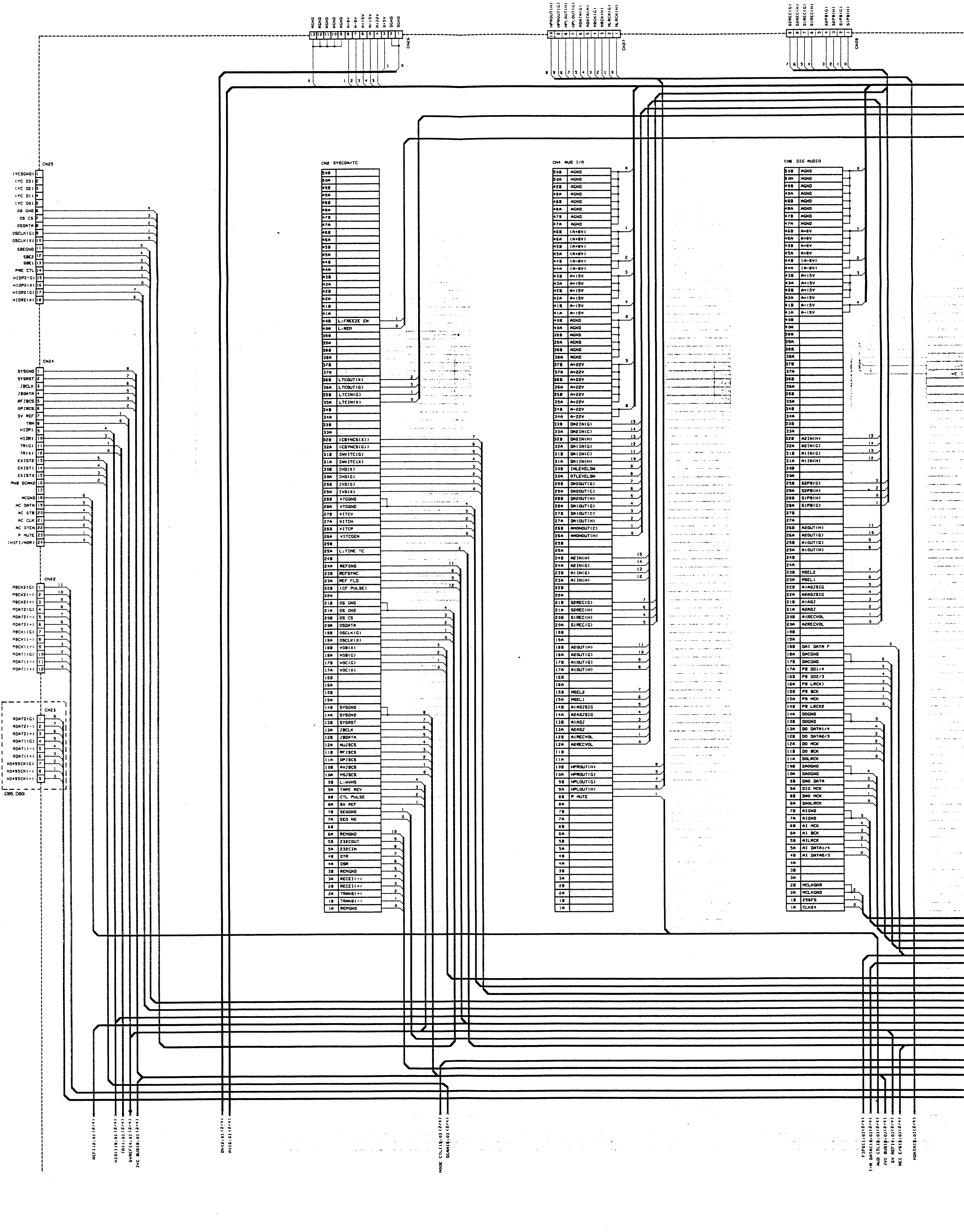
A-1C
Side — Y axis — X axis

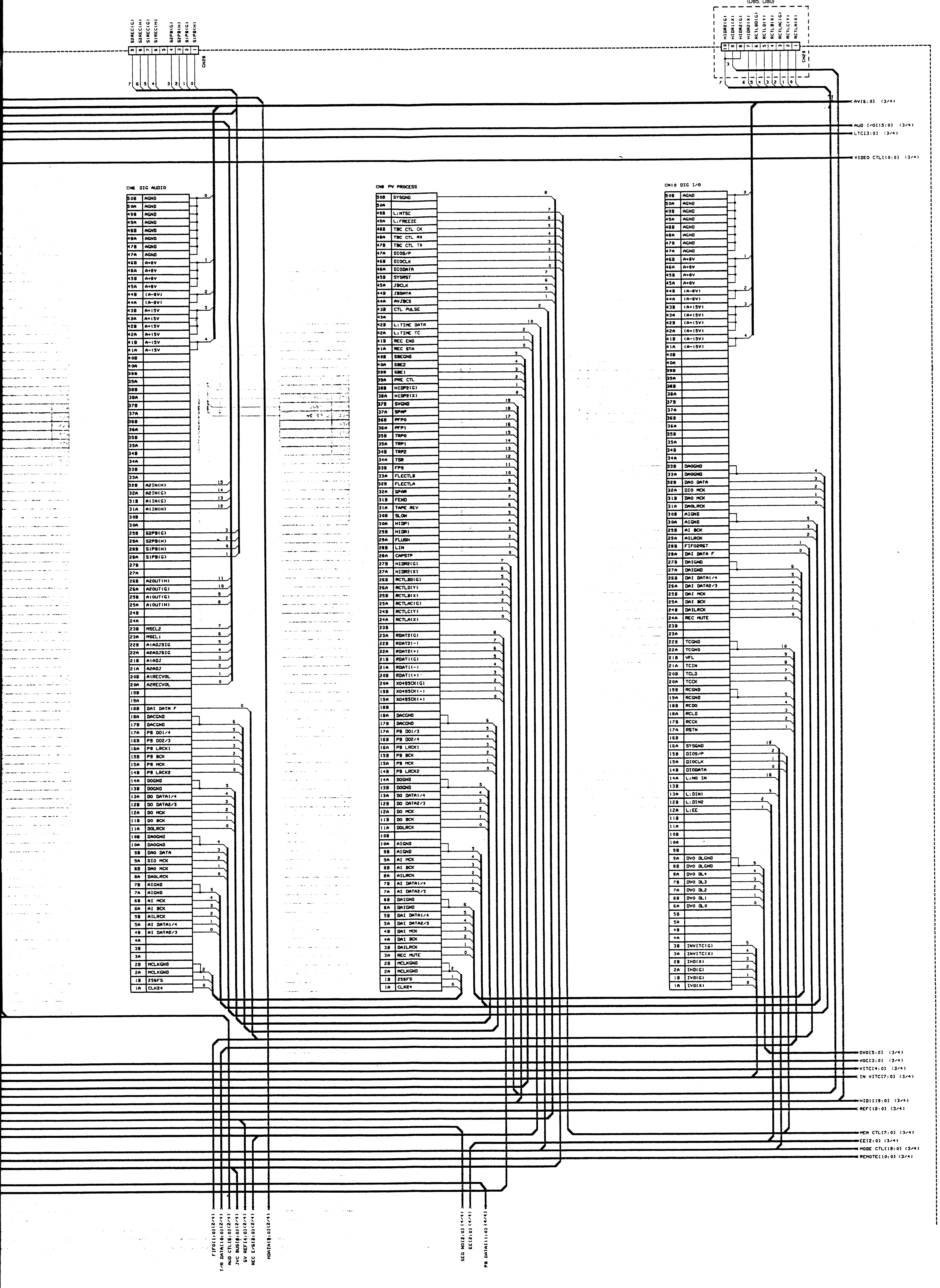
Each address may have an address error by one interval.

IC1	B- 2D	Q64	A- 5E	Q141	A- 5B	R10	B- 2B
IC2	A- 2A	Q65	A- 5E	Q142	A- 6C	R11	B- 2B
IC3	B- 2A	Q66	A- 5E	Q143	A- 6C	R12	B- 2C
IC4	A- 1C	Q67	A- 6E	Q144	B- 7E	R13	B- 2B
IC5	A- 2I	Q68	B- 9F	Q145	A- 3D	R14	B- 2A
IC6	A- 3F	Q69	B- 9F	Q146	B- 3D	R15	B- 2A
IC7	A- 9H	Q70	B- 9G	Q147	B- 3D	R16	B- 2A
IC8	A- 9J	Q71	B- 9H	Q148	B- 4C	R17	A- 2F
IC9	A- 5I	Q72	B- 9H	Q149	A- 3D	R18	A- 2F
IC10	B- 4A	Q73	B- 10I	Q150	A- 4C	R19	A- 2F
IC11	A- 6A	Q74	B- 8J	Q151	B- 4D	R20	A- 2G
IC12	A- 8D	Q75	B- 7J	Q152	B- 4D	R21	A- 2G
IC13	A- 8B	Q76	B- 9K	Q153	B- 5D	R22	A- 2G
		Q77	B- 8K	Q154	A- 9C	R23	A- 2G
Q1	A- 2C	Q78	B- 8J	Q155	A- 10C	R24	A- 2G
Q2	B- 2C	Q79	B- 8J	Q156	B- 9C	R25	A- 2G
Q3	A- 2C	Q80	B- 6G	Q157	A- 9C	R26	A- 1H
Q4	A- 3C	Q81	B- 5G	Q158	B- 9C	R27	A- 1H
Q5	A- 2C	Q82	A- 5I	Q159	B- 9B	R28	A- 2H
Q6	B- 2C	Q83	A- 5H	Q160	B- 9C	R29	A- 2I
Q7	B- 2B	Q84	A- 5H	Q161	A- 8C	R30	A- 2I
Q8	B- 2B	Q85	B- 6J	Q162	B- 8C	R31	A- 2I
Q9	B- 2B	Q86	B- 6H	Q163	B- 6B	R32	B- 1I
Q10	A- 2F	Q87	A- 6H	Q164	B- 8A	R33	B- 1I
Q11	A- 2F	Q88	A- 6H	Q165	B- 7B	R34	A- 2J
Q12	A- 2F	Q89	A- 5H	Q166	B- 7A	R35	A- 1I
Q13	A- 2G	Q90	A- 5H	Q167	B- 8A	R36	A- 2J
Q14	A- 2G	Q91	A- 6H	Q168	B- 8A	R37	A- 2J
Q15	A- 1I	Q92	A- 7I	Q169	B- 8A	R38	A- 2K
Q16	A- 1I	Q93	B- 6J	Q170	B- 10A	R39	A- 2K
Q17	A- 1I	Q94	B- 6I	Q171	B- 10C	R40	A- 2K
Q18	A- 1J	Q95	A- 6J	Q172	A- 1J	R41	B- 2K
Q19	A- 2J	Q96	A- 6K	Q173	A- 1J	R42	A- 2K
Q20	A- 2K	Q97	A- 6K	Q174	A- 8F	R43	A- 2K
Q21	A- 2K	Q98	A- 7J	Q175	A- 8F	R44	A- 2K
Q22	A- 2K	Q99	A- 7K	Q176	A- 7F	R45	B- 2K
Q23	A- 1K	Q100	A- 6L	Q177	B- 2E	R46	A- 2K
Q24	A- 2K	Q101	B- 6J	Q178	A- 2E	R47	B- 2J
Q25	B- 3K	Q102	A- 6J	Q179	B- 2E	R48	B- 2J
Q26	A- 3I	Q103	A- 4J	Q180	B- 2E	R49	B- 3L
Q27	A- 3I	Q104	B- 4J	Q181	B- 2E	R50	A- 3K
Q28	A- 3I	Q105	A- 5J	Q182	B- 2E	R51	A- 2J
Q29	A- 3I	Q106	A- 4I	Q183	B- 7C	R52	A- 3H
Q30	A- 3J	Q107	B- 4I	Q184	B- 7C	R53	A- 3H
Q31	A- 3J	Q108	B- 4K	Q185	B- 7B	R54	A- 3I
Q32	A- 3J	Q109	B- 4J	Q186	B- 7B	R55	A- 3I
Q33	A- 3J	Q110	B- 4I			R56	A- 3I
Q34	A- 4K	Q111	B- 4J	D1	B- 2B	R57	A- 3I
Q35	A- 3J	Q112	A- 3B	D2	A- 3I	R58	A- 3H
Q36	A- 3J	Q113	A- 3C	D3	A- 3J	R59	A- 3H
Q37	A- 3H	Q114	B- 3B	D4	A- 4I	R60	A- 3I
Q38	A- 4I	Q115	A- 4C	D5	A- 4I	R61	A- 3H
Q39	A- 3H	Q116	B- 4C	D6	A- 6E	R62	A- 3H
Q40	A- 7F	Q117	B- 4B	D7	A- 6E	R63	A- 3J
Q41	A- 8F	Q118	A- 4B	D8	A- 6H	R64	A- 3J
Q42	A- 8F	Q119	B- 4B	D9	A- 6H	R65	A- 3J
Q43	A- 8G	Q120	B- 4B	D10	A- 7I	R66	A- 3J
Q44	A- 8F	Q121	A- 4B	D11	B- 6K	R67	A- 3J
Q45	A- 8G	Q122	A- 4B	D12	B- 6K	R68	A- 3J
Q46	A- 8H	Q123	A- 5B	D13	A- 4K	R69	A- 3K
Q47	A- 8H	Q124	B- 5B	D14	A- 4K	R70	A- 3K
Q48	A- 8G	Q125	B- 3C	D15	A- 5A	R71	A- 3J
Q49	A- 3E	Q126	A- 3C	D16	A- 5B	R72	A- 4J
Q50	A- 4F	Q127	A- 3C	D17	B- 9C	R73	A- 3J
Q51	A- 5G	Q128	B- 3C	D18	B- 8C	R74	A- 4K
Q52	A- 5G	Q129	A- 3B	D19	A- 7C	R75	A- 3K
Q53	A- 5F	Q130	B- 3A	D20	A- 7D	R76	A- 3K
Q54	A- 4F	Q131	A- 3B			R77	A- 4J
Q55	A- 5F	Q132	A- 3B	R1	B- 2C	R78	A- 4J
Q56	A- 5G	Q133	B- 3B	R2	B- 2C	R79	A- 4J
Q57	A- 6F	Q134	A- 3B	R3	A- 2C	R80	A- 4J
Q58	A- 6F	Q135	B- 3B	R4	A- 2C	R81	A- 4J
Q59	A- 4F	Q136	B- 3A	R5	B- 2C	R82	A- 4K
Q60	A- 4E	Q137	A- 4A	R6	B- 2C	R83	A- 4I
Q61	A- 4E	Q138	A- 6B	R7	B- 2B	R84	A- 4I
Q62	A- 5E	Q139	A- 6B	R8	A- 2A	R85	A- 3I
Q63	A- 5E	Q140	A- 5C	R9	A- 2A	R86	A- 4H

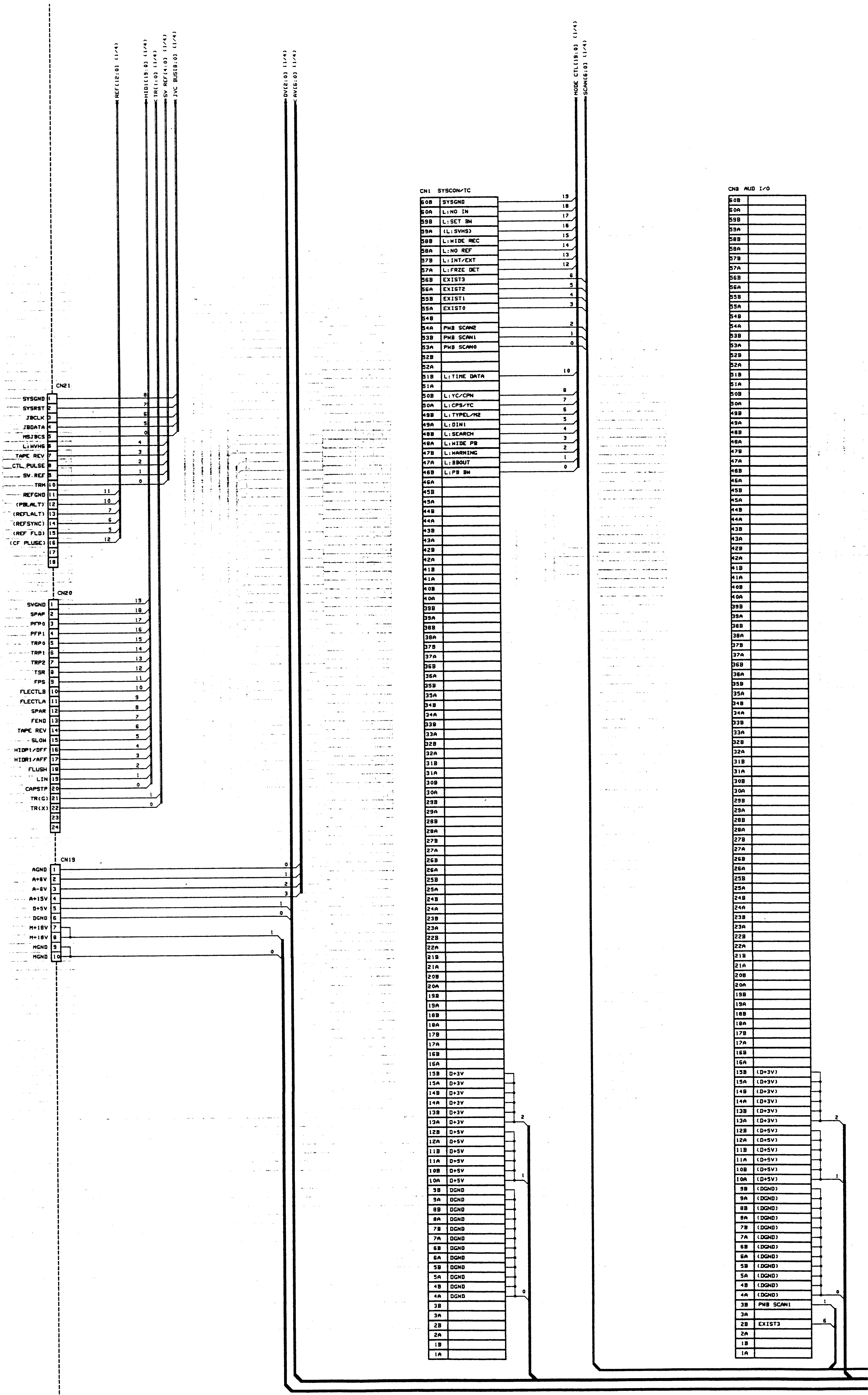
4.16 MOTHER-1 SCHEMATIC DIAGRAMS

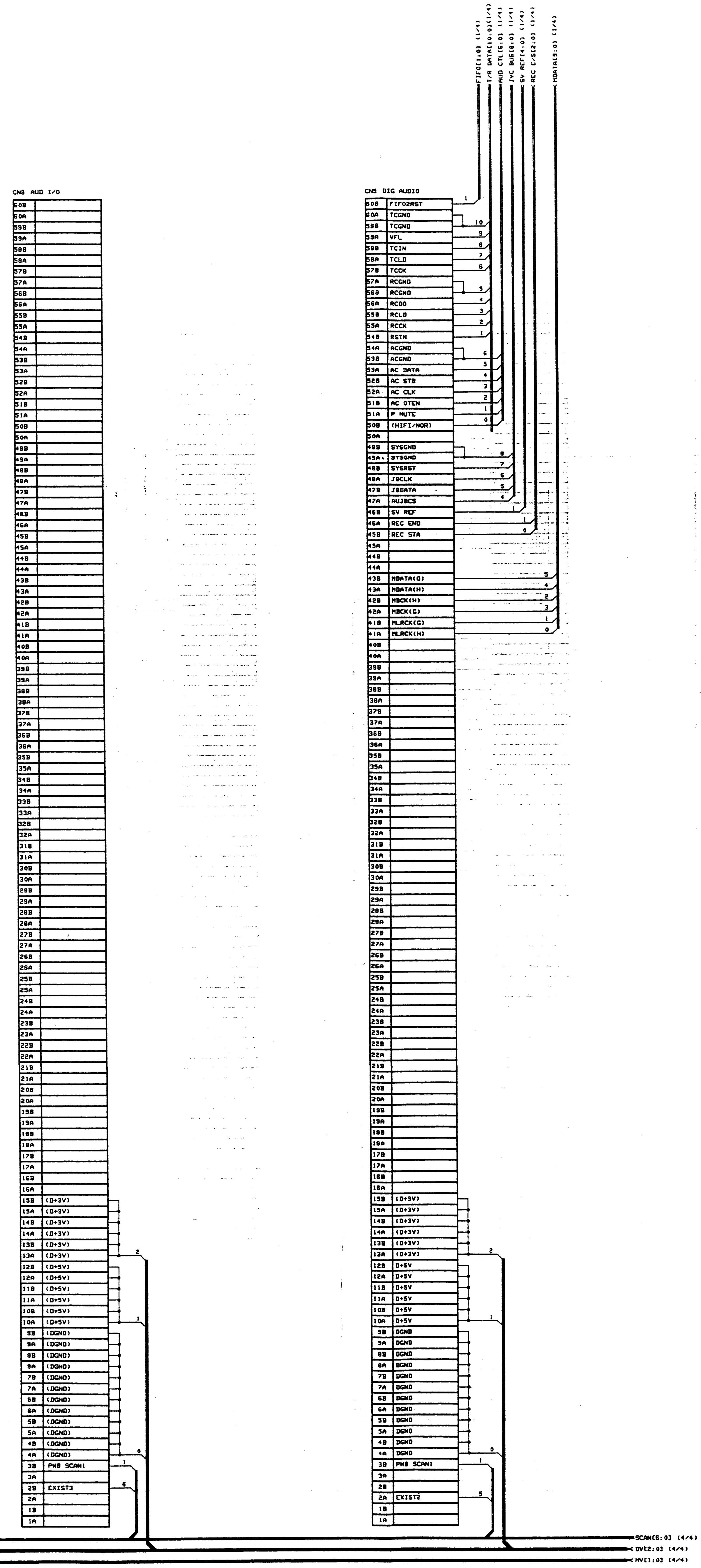
— DIAGRAM 1/4 —


CN26
AGND
A+8V
A+15V
A-15V
A+22V
D+5V
DGND
CN27
HPROUT(H)
HPROUT(G)
HPLOUT(H)
HPLOUT(G)
MDATA(G)
MDATA(H)
MBCK(H)
MBCK(G)
MLRCK(G)
MLRCK(H)
CN28
S2REC(G)
S2REC(H)
S1REC(G)
S1REC(H)
S2PB(G)
S2PB(H)
S1PB(G)
S1PB(H)
CN25
(YCDGND)
(YC D3)
(YC D2)
(YC D1)
(YC D0)
OS GND
OS CS
OSDATA
OSCLK(G)
OSCLK(X)
SBEGND
SBE2
SBE1
PRC CTL
HIDP2(G)
HIDP2(X)
HIDR2(G)
HIDR2(X)
CN24
SYSGND
SYSRST
JBCLK
JBDATA
RFJBCS
OPJBCS
SV REF
TRH
HIDP1
HIDR1
TR(G)
TR(X)
EXIST2
EXIST1
EXIST0
PWB SCAN2
ACGND
AC DATA
AC STB
AC CLK
AC DTEN
P MUTE
(HIFI/NOR)
CN22
PBCK2(G)
PBCK2(-)
PBCK2(+)
PDAT2(G)
PDAT2(-)
PDAT2(+)
PBCK1(G)
PBCK1(-)
PBCK1(+)
PDAT1(G)
PDAT1(-)
PDAT1(+)
CN23
RDAT2(G)
RDAT2(-)
RDAT2(+)
RDAT1(G)
RDAT1(-)
RDAT1(+)
X0495CK(G)
X0495CK(-)
X0495CK(+)
(D85, D80)
CN2 SYSCON/TC
L:FREEZE EN
L:REM
LTCOUT(X)
LTCOUT(G)
LTCIN(G)
LTCIN(X)
(CSYNCS(X))
(CSYNCS(G))
INVITC(G)
INVITC(X)
IHD(X)
IHD(G)
IVD(G)
IVD(X)
VTCGND
VITCV
VITCH
VITCP
VITCGEN
L:TIME TC
REFGND
REFSYNC
REF FLD
(CF PULSE)
OS GND
OS CS
OSDATA
OSCLK(G)
OSCLK(X)
VOB(X)
VOB(G)
VOC(G)
VOC(X)
SYSGND
SYSRST
JBCLK
JBDATA
AVJBCS
RFJBCS
OPJBCS
AVJBCS
MSJBCS
L:NVHS
TAPE REV
CTL PULSE
SV REF
SEQGND
SEQ NO
REMGND
232COUT
232CIN
DTR
DSR
REMGND
RECEI(-)
RECEI(+)
TRANS(+)
TRANS(-)
REMGND
CN4 AUD I/O
AGND
(A+8V)
(A-8V)
A+15V
A-15V
A+22V
A-22V
DA2IN(G)
DA2IN(C)
DA2IN(H)
DA1IN(G)
DA1IN(C)
DA1IN(H)
INLEVELSW
OTLEVELSW
DA2OUT(G)
DA2OUT(C)
DA2OUT(H)
DA1OUT(G)
DA1OUT(C)
DA1OUT(H)
AMONOUT(C)
AMONOUT(H)
A2IN(H)
A2IN(G)
A1IN(G)
A1IN(H)
S2REC(G)
S2REC(H)
S1REC(H)
S1REC(G)
A2OUT(H)
A2OUT(G)
A1OUT(G)
A1OUT(H)
MSEL2
MSEL1
A1ADJSIG
A2ADJSIG
A1ADJ
A2ADJ
A1RECVOL
A2RECVOL
HPROUT(H)
HPROUT(G)
HPLOUT(G)
HPLOUT(H)
P MUTE
CN6 DIG AUDIO
AGND
A+8V
(A-8V)
A+15V
A-15V
A2IN(H)
A2IN(G)
A1IN(G)
A1IN(H)
S2PB(G)
S2PB(H)
S1PB(H)
S1PB(G)
A2OUT(H)
A2OUT(G)
A1OUT(G)
A1OUT(H)
MSEL2
MSEL1
A1ADJSIG
A2ADJSIG
A1ADJ
A2ADJ
A1RECVOL
A2RECVOL
DAI DATA F
DACGND
PB DO1/4
PB DO2/3
PB LRCK1
PB BCK
PB MCK
PB LRCK2
DOGND
DO DATA1/4
DO DATA2/3
DO MCK
DO BCK
DOLRCK
DAOGND
DAO DATA
DIO MCK
DAO MCK
DAOLRCK
AIGND
AI MCK
AI BCK
AILRCK
AI DATA1/4
AI DATA2/3
MCLKGND
256FS
CLK24
REF(12:0)(2/4)
HID1(15:0)(2/4)
TR(1:0)(2/4)
SVREF(4:0)(2/4)
JVC BUS(8:0)(2/4)
DV(2:0)(2/4)
AV(6:0)(2/4)
MODE CTL(3:0)(2/4)
SCAN(6:0)(2/4)
FIFO(1:0)(2/4)
T/R DATA(1:0)(2/4)
AUD CTL(8:0)(2/4)
JVC BUS(8:0)(2/4)
SV REF(4:0)(2/4)
REC E/E(2:0)(2/4)
MDATA(8:0)(2/4)

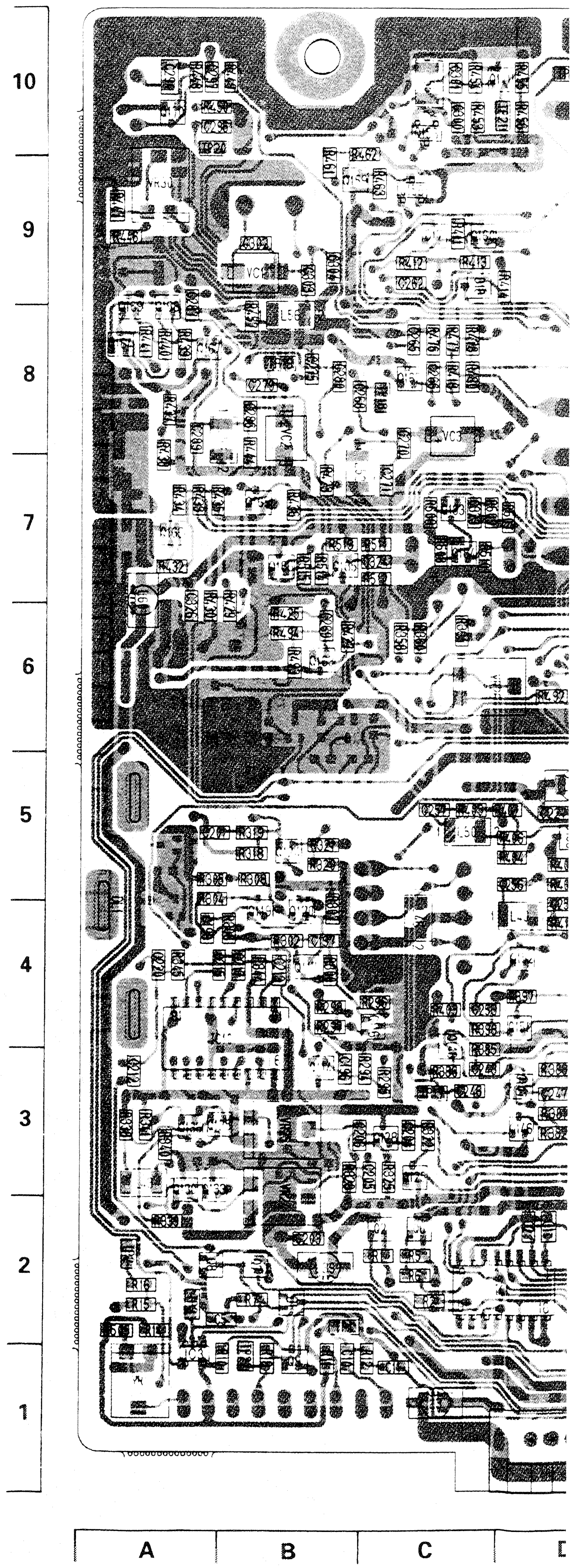

S2REC(G)
S2REC(H)
S1REC(G)
S1REC(H)
S2PB(G)
S2PB(H)
S1PB(G)
S1PB(H)
CN28
(D85, D80)
HIDR2(G)
HIDR1(X)
HIDR2(G)
HIDR2(X)
RCTLBD(G)
RCTLD(Y)
RCTLB(X)
RCTLAC(G)
RCTLC(Y)
RCTLA(X)
CN29
AV[6:0] (3/4)
AUD I/O[15:0] (3/4)
LTC[3:0] (3/4)
VIDEO CTL[10:0] (3/4)
CN6 DIG AUDIO
50B AGND
50A AGND
49B AGND
49A AGND
48B AGND
48A AGND
47B AGND
47A AGND
46B A+8V
46A A+8V
45B A+8V
45A A+8V
44B (A-8V)
44A (A-8V)
43B A+15V
43A A+15V
42B A+15V
42A A+15V
41B A-15V
41A A-15V
32B A2IN(H)
32A A2IN(G)
31B A1IN(G)
31A A1IN(H)
29B S2PB(G)
29A S2PB(H)
28B S1PB(H)
28A S1PB(G)
26B A2OUT(H)
26A A2OUT(G)
25B A1OUT(G)
25A A1OUT(H)
23B MSEL2
23A MSEL1
22B A1ADJSIG
22A A2ADJSIG
21B A1ADJ
21A A2ADJ
20B A1RECVOL
20A A2RECVOL
18B DAI DATA F
18A DACGND
17B DACGND
17A PB DO1/4
16B PB DO2/3
16A PB LRCK1
15B PB BCK
15A PB MCK
14B PB LRCK2
14A DOGND
13B DOGND
13A DO DATA1/4
12B DO DATA2/3
12A DO MCK
11B DO BCK
11A DOLRCK
10B DAOGND
10A DAOGND
9B DAO DATA
9A DIO MCK
8B DAO MCK
8A DAOLRCK
7B AIGND
7A AIGND
6B AI MCK
6A AI BCK
5B AILRCK
5A AI DATA1/4
4B AI DATA2/3
2B MCLKGND
2A MCLKGND
1B 256FS
1A CLK24
CN8 PV PROCESS
50B SYSGND
49B L:NTSC
49A L:FREEZE
48B TBC CTL CK
48A TBC CTL RX
47B TBC CTL TX
47A DIOS/P
46B DIOCLK
46A DIODATA
45B SYSRST
45A JBCLK
44B JBDATA
44A AVJBCS
43B CTL PULSE
42B L:TIME DATA
42A L:TIME TC
41B REC END
41A REC STA
40B SBCGND
40A SBE2
39B SBE1
39A PRE CTL
38B HIDP2(G)
38A HIDP2(X)
37B SVGND
37A SPAP
36B PFP0
36A PFP1
35B TRP0
35A TRP1
34B TRP2
34A TSR
33B FPS
33A FLECTLB
32B FLECTLA
32A SPAR
31B FEND
31A TAPE REV
30B SLOW
30A HIDP1
29B HIDR1
29A FLUSH
28B LIN
28A CAPSTP
27B HIDR2(G)
27A HIDR2(X)
26B RCTLBD(G)
26A RCTLD(Y)
25B RCTLB(X)
25A RCTLAC(G)
24B RCTLC(Y)
24A RCTLA(X)
23A RDAT2(G)
22B RDAT2(-)
22A RDAT2(+)
21B RDAT1(G)
21A RDAT1(-)
20B RDAT1(+)
20A X0495CK(G)
19B X0495CK(-)
19A X0495CK(+)
18A DACGND
17B DACGND
17A PB DO1/3
16B PB DO2/4
16A PB LRCK1
15B PB BCK
15A PB MCK
14B PB LRCK2
14A DOGND
13B DOGND
13A DO DATA1/4
12B DO DATA2/3
12A DO MCK
11B DO BCK
11A DOLRCK
10A AIGND
9B AIGND
9A AI MCK
8B AI BCK
8A AILRCK
7B AI DATA1/4
7A AI DATA2/3
6B DAIGND
6A DAIGND
5B DAI DATA1/4
5A DAI DATA2/3
4B DAI MCK
4A DAI BCK
3B DAILRCK
3A REC MUTE
2B MCLKGND
2A MCLKGND
1B 256FS
1A CLK24
CN10 DIG I/O
50B AGND
50A AGND
49B AGND
49A AGND
48B AGND
48A AGND
47B AGND
47A AGND
46B A+8V
46A A+8V
45B A+8V
45A A+8V
44B (A-8V)
44A (A-8V)
43B (A+15V)
43A (A+15V)
42B (A+15V)
42A (A+15V)
41B (A-15V)
41A (A-15V)
33B DAOGND
33A DAOGND
32B DAO DATA
32A DIO MCK
31B DAO MCK
31A DAOLRCK
30B AIGND
30A AIGND
29B AI BCK
29A AILRCK
28B FIFO2RST
28A DAI DATA F
27B DAIGND
27A DAIGND
26B DAI DATA1/4
26A DAI DATA2/3
25B DAI MCK
25A DAI BCK
24B DAILRCK
24A REC MUTE
22B TCGND
22A TCGND
21B VFL
21A TCIN
20B TCLD
20A TCCK
19B RCGND
19A RCGND
18B RCDO
18A RCLD
17B RCCK
17A RSTN
16A SYSGND
15B DIOS/P
15A DIOCLK
14B DIODATA
14A L:NQ IN
13A L:DIN1
12B L:DIN2
12A L:EE
9A DVO DLGND
8B DVO DLGND
8A DVO DL4
7B DVO DL3
7A DVO DL2
6B DVO DL1
6A DVO DL0
3B INVITC(G)
3A INVITC(X)
2B IHD(X)
2A IHD(G)
1B IVO(G)
1A IVO(X)
DVO[5:0] (3/4)
VOC[3:0] (3/4)
VITC[4:0] (3/4)
IN VITC[7:0] (3/4)
HID1[19:0] (3/4)
REF[12:0] (3/4)
MEM CTL[7:0] (3/4)
EE[2:0] (3/4)
MODE CTL[19:0] (3/4)
REMOTE[10:0] (3/4)
FIFO[1:0](2/4)
T/R DATA[10:0](2/4)
AUD CTL[6:0](2/4)
JVC BUS[8:0](2/4)
SV REF[4:0](2/4)
REC E/S[2:0](2/4)
MDATA[8:0](2/4)
SEQ NO[2:0] (4/4)
EE[2:0] (4/4)
PB DATA[11:0] (4/4)

— DIAGRAM 2/4 —


REF[12:0] (1/4)
HIDI[19:0] (1/4)
TR[1:0] (1/4)
SV REF[4:0] (1/4)
JVC BUS[8:0] (1/4)
DV[2:0] (1/4)
AV[6:0] (1/4)
MODE CTL[19:0] (1/4)
SCAN[6:0] (1/4)
CN21
1 SYSGND
2 SYSRST
3 JBCLK
4 JBDATA
5 MSJBCS
6 L:WVHS
7 TAPE REV
8 CTL PULSE
9 SV REF
10 TRM
11 REFGND
12 (PBLALT)
13 (REFLALT)
14 (REFSYNC)
15 (REF FLD)
16 (CF PLUSE)
17
18
CN20
1 SVGND
2 SPAP
3 PFP0
4 PFP1
5 TRP0
6 TRP1
7 TRP2
8 TSR
9 FPS
10 FLECTLB
11 FLECTLA
12 SPAR
13 FEND
14 TAPE REV
15 SLOW
16 HIDP1/OFF
17 HIDR1/AFF
18 FLUSH
19 LIN
20 CAPSTP
21 TR(G)
22 TR(X)
23
24
CN19
1 AGND
2 A+8V
3 A-8V
4 A+15V
5 D+5V
6 DGND
7 M+18V
8 M+18V
9 MGND
10 MGND
CN1 SYSCON/TC
60B SYSGND
60A L:NO IN
59B L:SET BW
59A (L:SVHS)
58B L:WIDE REC
58A L:NO REF
57B L:INT/EXT
57A L:FRZE DET
56B EXIST3
56A EXIST2
55B EXIST1
55A EXIST0
54A PWB SCAN2
53B PWB SCAN1
53A PWB SCAN0
51B L:TIME DATA
50B L:YC/CPN
50A L:CPS/YC
49B L:TYPEL/M2
49A L:DIN1
48B L:SEARCH
48A L:WIDE PB
47B L:WARNING
47A L:BBOUT
46B L:PB BW
15B D+3V
15A D+3V
14B D+3V
14A D+3V
13B D+3V
13A D+3V
12B D+5V
12A D+5V
11B D+5V
11A D+5V
10B D+5V
10A D+5V
9B DGND
9A DGND
8B DGND
8A DGND
7B DGND
7A DGND
6B DGND
6A DGND
5B DGND
5A DGND
4B DGND
4A DGND
CN8 AUD I/O
15B (D+3V)
15A (D+3V)
14B (D+3V)
14A (D+3V)
13B (D+3V)
13A (D+3V)
12B (D+5V)
12A (D+5V)
11B (D+5V)
11A (D+5V)
10B (D+5V)
10A (D+5V)
9B (DGND)
9A (DGND)
8B (DGND)
8A (DGND)
7B (DGND)
7A (DGND)
6B (DGND)
6A (DGND)
5B (DGND)
5A (DGND)
4B (DGND)
4A (DGND)
3B PWB SCAN1
2B EXIST3

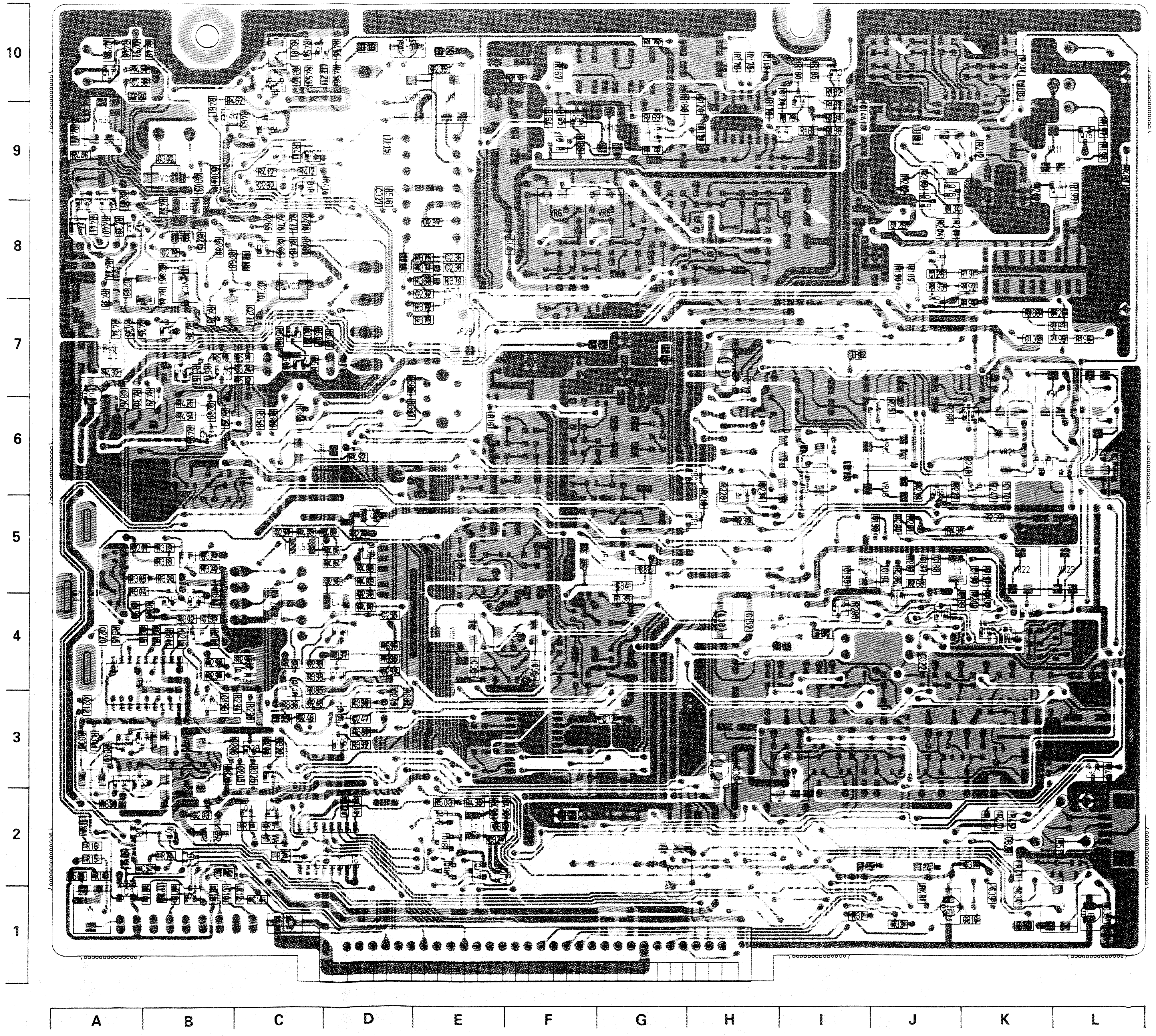

CN8 AUD I/O
15B (D+3V)
15A (D+3V)
14B (D+3V)
14A (D+3V)
13B (D+3V)
13A (D+3V)
12B (D+5V)
12A (D+5V)
11B (D+5V)
11A (D+5V)
10B (D+5V)
10A (D+5V)
9B (DGND)
9A (DGND)
8B (DGND)
8A (DGND)
7B (DGND)
7A (DGND)
6B (DGND)
6A (DGND)
5B (DGND)
5A (DGND)
4B (DGND)
4A (DGND)
3B PWB SCAN1
2B EXIST3
CN5 DIG AUDIO
60B FIFO2RST
60A TCGND
59B TCGND
59A VFL
58B TCIN
58A TCLD
57B TCCK
57A RCGND
56B RCGND
56A RCDO
55B RCLD
55A RCCK
54B RSTN
54A ACGND
53B ACGND
53A AC DATA
52B AC STB
52A AC CLK
51B AC OTEN
51A P MUTE
50B (HIFI/NOR)
49B SYSGND
49A SYSGND
48B SYSRST
48A JBCLK
47B JBDATA
47A AUJBCS
46B SV REF
46A REC END
45B REC STA
43B MDATA(G)
43A MDATA(H)
42B MBCK(H)
42A MBCK(G)
41B MLRCK(G)
41A MLRCK(H)
15B (D+3V)
15A (D+3V)
14B (D+3V)
14A (D+3V)
13B (D+3V)
13A (D+3V)
12B D+5V
12A D+5V
11B D+5V
11A D+5V
10B D+5V
10A D+5V
9B DGND
9A DGND
8B DGND
8A DGND
7B DGND
7A DGND
6B DGND
6A DGND
5B DGND
5A DGND
4B DGND
4A DGND
3B PWB SCAN1
2A EXIST2
FIFO[1:0] (1/4)
T/R DATA[10:0](1/4)
AUD CTL[6:0] (1/4)
JVC BUS[8:0] (1/4)
SV REF[4:0] (1/4)
REC E/S[2:0] (1/4)
MDATA[9:0] (1/4)
SCAN[6:0] (4/4)
DV[2:0] (4/4)
MV[1:0] (4/4)

R87	A- 3I	R164	B- 9F	R241	A- 6I	R318	B- 5B	R395	B- 4D	R472	A- 1J	VR30	B- 9A	C76	A- 3F	C153	A- 5I	C230	A- 6C	C307	A- 10C	L49	B- 4D
R88	A- 4I	R165	B- 9F	R242	A- 7H	R319	B- 5B	R396	B- 4D	R473	A- 1K			C77	B- 3F	C154	A- 5H	C231	A- 6C	C308	A- 9C	L50	B- 5C
R89	A- 3I	R166	B- 9F	R243	A- 7H	R320	B- 5B	R397	B- 4D	R474	A- 2J	C1	B- 2D	C78	A- 3F	C155	A- 5I	C232	B- 7D	C309	A- 10C	L51	A- 8C
R90	A- 4I	R167	B- 10F	R244	A- 7I	R321	B- 5B	R398	B- 4C	R475	A- 1J	C2	B- 2D	C79	A- 4F	C156	A- 5H	C233	A- 7D	C310	B- 1J	L52	B- 7B
R91	A- 4H	R168	B- 9G	R245	A- 7I	R322	B- 3C	R399	A- 4D	R476	B- 8C	C3	A- 2D	C80	A- 4F	C157	A- 5I	C234	A- 7D	C311	A- 1H	L53	B- 7B
R92	A- 4H	R169	B- 9G	R246	A- 7I	R323	A- 3C	R400	A- 4D	R477	B- 8C	C4	A- 2D	C81	A- 4F	C158	A- 5H	C235	A- 7D	C312	A- 8G	L54	A- 9A
R93	A- 3H	R170	B- 9G	R247	B- 6J	R324	A- 3C	R401	A- 4D	R478	B- 8C	C5	B- 2B	C82	B- 5G	C159	A- 6H	C236	B- 8E	C313	A- 4K	L55	B- 10C
R94	A- 4H	R171	B- 9G	R248	B- 6J	R325	B- 3C	R402	A- 4D	R479	A- 8C	C6	A- 2A	C83	A- 5F	C160	A- 6H	C237	B- 8E	C314	A- 4J	L56	B- 8B
R95	A- 7F	R172	A- 9G	R249	A- 7H	R326	A- 3B	R403	B- 4C	R480	B- 8C	C7	A- 2A	C84	B- 5G	C161	A- 6H	C238	B- 8E	C315	A- 10D	L57	B- 10D
R96	A- 7F	R173	A- 9H	R250	A- 7I	R327	A- 3C	R404	B- 5D	R481	B- 2J	C8	A- 2C	C85	A- 5F	C162	A- 6I	C239	B- 10E	C316	A- 2E	L58	A- 3E
R97	A- 8F	R174	A- 9H	R251	B- 6I	R328	B- 3B	R405	B- 5C	R482	A- 1F	C9	A- 1C	C86	A- 6F	C163	A- 6I	C240	A- 9E	C317	B- 2E	L59	B- 2E
R98	A- 8F	R175	B- 10H	R252	A- 6J	R329	A- 3B	R406	B- 5D	R483	A- 8F	C10	B- 2B	C87	A- 6G	C164	A- 7I	C241	A- 9D	C318	A- 2E	L60	B- 6A
R99	A- 8F	R176	B- 10H	R253	A- 7J	R330	A- 3B	R407	B- 5C	R484	A- 8F	C11	B- 2C	C88	A- 6G	C165	A- 6H	C242	A- 6D	C319	A- 3E		
R100	A- 8F	R177	B- 10G	R254	A- 6K	R331	A- 3A	R408	B- 5D	R485	A- 8F	C12	A- 2B	C89	A- 6F	C166	A- 6I	C243	A- 6D	C320	A- 1E	DL1	A- 5A
R101	A- 8F	R178	B- 9H	R255	A- 6K	R332	A- 3B	R409	B- 5D	R486	A- 8F	C13	A- 2B	C90	A- 6F	C167	A- 7I	C244	A- 3D	C321	B- 2E	DL2	A- 7D
R102	A- 8F	R179	B- 9H	R256	A- 6K	R333	A- 3B	R410	B- 4D	R487	B- 9L	C14	A- 2B	C91	A- 6F	C168	A- 7J	C245	A- 3D	C322	B- 4J		
R103	A- 8G	R180	B- 10H	R257	A- 6K	R334	A- 3B	R411	B- 9C	R488	B- 5J	C15	A- 2A	C92	A- 7F	C169	A- 6H	C246	B- 3C	C323	B- 7C	TP1	B- 2B
R104	A- 8G	R181	B- 9H	R258	A- 6K	R335	A- 3B	R412	B- 9C	R489	A- 2I	C16	A- 1A	C93	A- 7G	C170	B- 6J	C247	B- 3D	C324	B- 7C	TP2	B- 2A
R105	A- 8G	R182	B- 9I	R259	A- 6L	R336	A- 3B	R413	B- 9C	R490	A- 5I	C17	A- 2F	C94	A- 4F	C171	A- 6J	C248	B- 3C	C325	A- 7A	TP3	B- 2A
R106	A- 8F	R183	B- 9I	R260	A- 7J	R337	A- 3A	R414	B- 8C	R491	A- 5E	C18	A- 2G	C95	B- 4F	C172	A- 7J	C249	B- 4D	C326	B- 6A	TP4	B- 2J
R107	A- 8G	R184	B- 9I	R261	A- 7K	R338	B- 3A	R415	A- 9C	R492	B- 6D	C19	A- 2G	C96	A- 4E	C173	A- 6I	C250	A- 4D	C327	B- 8D	TP5	B- 2I
R108	A- 8G	R185	B- 10H	R262	A- 6J	R339	B- 3A	R416	A- 9C	R493	B- 6B	C20	A- 2H	C97	A- 4E	C174	A- 6K	C251	A- 4C	C328	A- 2J	TP6	B- 1K
R109	A- 7G	R186	B- 9I	R263	A- 6L	R340	B- 3A	R417	A- 8C	R494	B- 6B	C21	A- 1H	C98	B- 4E	C175	A- 6K	C252	B- 4D	C329	B- 2K	TP7	B- 7F
R110	A- 8G	R187	B- 7K	R264	A- 6L	R341	B- 3A	R418	B- 8C	R495	B- 3E	C22	A- 2H	C99	A- 4E	C176	A- 7H	C253	B- 4C	C330	A- 7C	TP8	B- 9K
R111	A- 8G	R188	B- 7K	R265	A- 6J	R342	A- 4B	R419	A- 8C	R496	B- 2E	C23	A- 2H	C100	A- 5E	C177	B- 7H	C254	A- 4D			TP9	B- 9J
R112	A- 8H	R189	B- 8I	R266	A- 6J	R343	A- 3A	R420	A- 8C	R497	A- 2E	C24	A- 2H	C101	A- 5E	C178	A- 5K	C255	B- 4D	VC1	B- 9B	TP10	B- 4I
R113	A- 8G	R190	B- 8I	R267	A- 6J	R344	B- 4B	R421	A- 8C	R498	B- 2E	C25	A- 2H	C102	A- 5E	C179	A- 5K	C256	B- 5D	VC2	B- 7B	TP11	B- 6I
R114	A- 8H	R191	B- 8J	R268	B- 6J	R345	B- 4A	R422	A- 8C	R499	A- 2E	C26	A- 2H	C103	A- 6E	C180	A- 5K	C257	B- 5C	VC3	B- 7C	TP12	B- 7I
R115	A- 8G	R192	B- 7J	R269	B- 5J	R346	A- 3B	R423	B- 7B	R500	A- 2E	C27	A- 1H	C104	A- 6F	C181	A- 4J	C258	B- 5D			TP13	B- 4H
R116	A- 8H	R193	B- 7J	R270	A- 4J	R347	A- 4B	R424	A- 7B	R501	A- 2E	C28	A- 2I	C105	A- 6F	C182	A- 5I	C259	A- 9B	L1	A- 2D	TP14	B- 8D
R117	A- 8G	R194	B- 7J	R271	A- 4J	R348	A- 4B	R425	B- 6B	R502	A- 2E	C29	A- 2J	C106	A- 6E	C183	A- 5I	C260	A- 9C	L2	A- 2B	TP15	B- 9D
R118	A- 8G	R195	B- 7K	R272	A- 5J	R349	A- 4B	R426	A- 6B	R503	B- 3E	C30	A- 2I	C107	A- 7E	C184	B- 5I	C261	A- 9C	L3	B- 1C	TP16	B- 10D
R119	A- 7G	R196	B- 7K	R273	A- 5J	R350	A- 4B	R427	B- 6B	R504	A- 3J	C31	B- 2J	C108	A- 7F	C185	B- 5I	C262	B- 8C	L4	A- 2B	TP17	B- 3C
R120	A- 7H	R197	B- 9K	R274	A- 4J	R351	A- 5A	R428	A- 7B	R505	B- 2A	C32	A- 2J	C109	A- 10E	C186	A- 5I	C263	A- 8C	L5	B- 2J	TP18	B- 8C
R121	A- 8G	R198	B- 9K	R275	A- 4K	R352	A- 4A	R429	B- 6B	R506	B- 7C	C33	B- 2J	C110	B- 9E	C187	B- 5J	C264	A- 8C	L6	B- 1K	TP19	B- 8B
R122	A- 3E	R199	B- 8K	R276	A- 4K	R353	A- 5A	R430	B- 6A	R507	B- 7C	C34	B- 2K	C111	A- 9F	C188	B- 5J	C265	B- 8C	L7	B- 3G	TP20	B- 9B
R123	A- 3F	R200	B- 8K	R277	A- 4K	R354	A- 6B	R431	A- 6A	R508	B- 7C	C35	B- 1L	C112	A- 9G	C189	B- 4J	C266	B- 8C	L8	A- 7F	TP21	B- 10C
R124	A- 3F	R201	B- 8J	R278	A- 4I	R355	A- 6B	R432	B- 7A	R509	B- 7C	C36	A- 1L	C113	A- 9G	C190	B- 5J	C267	A- 8C	L9	A- 7G	TP22	B- 2B
R125	A- 4F	R202	B- 8I	R279	A- 5J	R356	A- 5B	R433	B- 7A	R510	B- 7C	C37	A- 1K	C114	A- 9H	C191	B- 5J	C268	B- 8B	L10	A- 8F	TP23	B- 2F
R126	A- 4F	R203	B- 9J	R280	B- 5I	R357	A- 6C	R434	B- 7A	R511	B- 7C	C38	A- 3K	C115	A- 9H	C192	B- 4J	C269	B- 6B	L11	A- 7E	TP24	B- 7G
R127	A- 4G	R204	B- 8J	R281	B- 5I	R358	B- 6C	R435	B- 7B	R512	B- 7C	C39	B- 3H	C116	A- 10H	C193	B- 5I	C270	B- 7C	L12	A- 8H	TP25	B- 10E
R128	A- 4G	R205	A- 10J	R282	A- 4I	R359	A- 6C	R436	B- 7B	R513	B- 7B	C40	A- 3H	C117	B- 10H	C194	A- 4C	C271	B- 7C	L13	A- 8H	TP26	A- 3K
R129	A- 4G	R206	A- 9J	R283	B- 4I	R360	B- 6C	R437	B- 8A	R514	B- 7B	C41	A- 3I	C118	A- 10H	C195	A- 4B	C272	A- 7B	L14	A- 8H	TP27	A- 2K
R130	A- 4F	R207	A- 10J	R284	A- 4I	R361	A- 5C	R438	B- 7A	R515	B- 7B	C42	A- 3H	C119	A- 9G	C196	B- 3B	C273	A- 8B	L15	A- 8G	TP28	A- 3K
R131	A- 4F	R208	A- 10K	R285	A- 5I	R362	A- 6C	R439	B- 8A	R516	B- 8D	C43	A- 3K	C120	B- 9G	C197	B- 4B	C274	A- 8B	L16	A- 8H	TP29	A- 2K
R132	A- 4F	R209	A- 10K	R286	B- 5I	R363	A- 6C	R440	B- 8A	R517	B- 2K	C44	A- 4J	C121	A- 9H	C198	B- 4A	C275	B- 8B	L17	A- 4G		
R133	B- 4G	R210	A- 9K	R287	B- 5I	R364	B- 6C	R441	B- 8A	R518	A- 2K	C45	A- 3K	C122	A- 9H	C199	A- 4B	C276	A- 7B	L18	A- 4F	K1	A- 2D
R134	A- 5F	R211	B- 10K	R288	B- 5J	R365	A- 6C	R442	A- 8A			C46	A- 4K	C123	A- 10G	C200	A- 5B	C277	A- 7A	L19	A- 5F	K2	A- 2D
R135	A- 5F	R212	B- 9J	R289	B- 4J	R366	B- 7D	R443	A- 8A	VR1	B- 1A	C47	A- 3I	C124	B- 9H	C201	B- 5B	C278	A- 6A	L20	A- 5G	K3	A- 9E
R136	A- 5G	R213	A- 10I	R290	A- 3B	R367	B- 6D	R444	B- 7B	VR2	B- 2G	C48	A- 4G	C125	A- 10I	C202	A- 2B	C279	B- 8B	L21	A- 6G	K4	A- 9E
R137	A- 6F	R214	A- 10I	R291	A- 4B	R368	B- 8D	R445	A- 9A	VR3	B- 1K	C49	A- 4I	C126	B- 7K	C203	B- 2B	C280	B- 8B	L22	A- 6G		
R138	A- 5F	R215	A- 10I	R292	A- 4C	R369	A- 8D	R446	B- 9A	VR4	B- 3H	C50	A- 4H	C127	A- 8I	C204	B- 3C	C281	A- 7B	L23	A- 6G	TH1	A- 4I
R139	A- 5F	R216	A- 10J	R293	A- 3B	R370	B- 8E	R447	B- 9A	VR5	B- 8F	C51	A- 7F	C128	B- 8J	C205	B- 3C	C282	A- 8B	L24	A- 6G	TH2	A- 3I
R140	A- 6F	R217	A- 10J	R294	B- 3C	R371	B- 8D	R448	B- 10A	VR6	B- 8F	C52	A- 7F	C129	B- 8I	C206	B- 3B	C283	A- 8A	L25	A- 5F	TH3	A- 5J
R141	A- 6G	R218	A- 10J	R295	B- 3C	R372	B- 7D	R449	B- 10B	VR7	B- 5F	C53	A- 8F	C130	A- 8J	C207	A- 3A	C284	A- 8A	L26	A- 4E	TH4	A- 8I
R142	A- 6F	R219	B- 5G	R296	B- 4C	R373	B- 7D	R450	B- 10B	VR8	B- 4E	C54	A- 8F	C131	A- 7K	C208	A- 3B	C285	A- 8A	L27	A- 5F	TH5	A- 6D
R143	A- 6F	R220	A- 4I	R297	B- 4B	R374	A- 7D	R451	A- 9B	VR9	B- 4E	C55	A- 8F	C132	B- 7K	C209	A- 3A	C286	B- 8B	L28	A- 5F	TH6	A- 7C
R144	A- 6F	R221	A- 5I	R298	B- 4B	R375	B- 8D	R452	A- 9A	VR10	B- 9F	C56	A- 8G	C133	A- 8K	C210	A- 3A	C287	B- 8A	L29	A- 6F		
R145	A- 4E	R222	A- 5I	R299	A- 4B	R376	A- 10D	R453	B- 10C	VR11	B- 9K	C57	A- 8G	C134	B- 8J	C211	A- 3A	C288	A- 9A	L30	A- 9E	FL1	A- 10F
R146	A- 4E	R223	A- 5I	R300	B- 4B	R377	A- 10D	R454	B- 10C	VR12	B- 9J	C58	A- 8G	C135	A- 10J	C212	B- 3A	C289	B- 7A	L31	A- 9G	FL2	A- 8K
R147	A- 4F	R224	A- 5H	R301	A- 4B	R378	A- 10E	R455	B- 10D	VR13	B- 6I	C59	A- 8G	C136	A- 10J	C213	B- 4B	C290	A- 9A	L32	A- 8I	FL3	A- 8J
R148	A- 4F	R225	A- 5H	R302	B- 4B	R379	A- 9D	R456	B- 10D	VR14	B- 6I	C60	B- 8E	C137	A- 10J	C214	A- 2B	C291	A- 9A	L33	A- 7K	FL4	A- 7L
R149	A- 4E	R226	A- 5I	R303	A- 4B	R380	A- 3C	R457	B- 8B	VR15	B- 6H	C61	A- 8E	C138	A- 9K	C215	B- 4B	C292	A- 9A	L34	A- 9I	FL5	A- 10K
R150	A- 4F	R227	B- 6J	R304	B- 5B	R381	B- 3D	R458	A- 9C	VR16	B- 6H	C62	A- 8G	C139	A- 9K	C216	A- 4A	C293	A- 9A	L35	B- 7H	FL6	A- 7C
R151	A- 5E	R228	B- 6H	R305	B- 5B	R382	B- 3D	R459	A- 9B	VR17	B- 6K	C63	A- 8H	C140	A- 8K	C217	B- 4B	C294	B- 10A	L36	B- 5I	FL7	A- 6B
R152	A- 5E	R229	A- 6H	R306	B- 4B	R383	A- 3C	R460	A- 9C	VR18	B- 6J	C64	A- 8G	C141	A- 8J	C218	A- 4A	C295	A- 10A	L37	B- 5J	FL8	A- 7B
R153	A- 5E	R230	A- 6H	R307	B- 4B	R384	A- 3C	R461	B- 9B	VR19	B- 6K	C65	A- 8G	C142	A- 9I	C219	A- 4A	C296	B- 9B	L38	B- 4H	FL9	A- 5D
R154	A- 5F	R231	A- 5H	R308	B- 5B	R385	B- 4C	R462	B- 9C	VR20	B- 6K	C66	A- 8H	C143	A- 9J	C220	B- 4A	C297	B- 10A	L39	B- 2B		
R155	A- 5F	R232	B- 5H	R309	A- 5B	R386	B- 3C	R463	B- 9C	VR21	B- 6J	C67	A- 8H	C144	B- 9I	C221	A- 3B	C298	A- 9B	L40	A- 4A	CN1	A- 1F
R156	A- 5E	R233	B- 6J	R310	A- 5B	R387	B- 4D	R464	A- 9C	VR22	B- 5K	C68	A- 8H	C145	A- 9I	C222	A- 4A	C299	A- 10B	L41	A- 3A	CN2	A- 2L
R157	A- 6E	R234	B- 6H	R311	A- 5B	R388	B- 3D	R465	A- 10C	VR23	B- 5K	C69	A- 7G	C146	A- 10I	C223	A- 6A	C300	B- 10C	L42	A- 3A		
R158	A- 6E	R235	A- 6I	R312	A- 5B	R389	A- 4D	R466	A- 9C	VR24	B- 3B	C70	A- 7H	C147	A- 10I	C224	A- 7A	C301	B- 10C	L43	B- 3A	X1	A- 9B
R159	A- 6F	R236	A- 6I	R313	A- 4B	R390	A- 4D	R467	A- 10C	VR25	B- 3B	C71	A- 7H	C148	A- 10I	C225	A- 6A	C302	B- 9B	L44	B- 5D		
R160	A- 6E	R237	A- 6I	R314	A- 5B	R391	A- 4D	R468	A- 9C	VR26	B- 6C	C72	A- 3E	C149	A- 10J	C226	A- 7A	C303	B- 8B	L45	A- 6E		
R161	B- 6E	R238	A- 6H	R315	A- 5B	R392	A- 3C	R469	A- 10C	VR27	B- 9E	C73	A- 3E	C150	A- 10J	C227	B- 5D	C304	B- 9B	L46	B- 4C		
R162	A- 6E	R239	A- 7I	R316	A- 5B	R393	A- 4D	R470	A- 9C	VR28	B- 7E	C74	A- 3F	C151	A- 4H	C228	A- 5D	C305	A- 9B	L47	A- 5D		
R163	A- 6E	R240	A- 7I	R317	A- 5B	R394	A- 3C	R471	A- 2J	VR29	B- 9D	C75	A- 3G	C152	B- 4H	C229	A- 5C	C306	A- 9B	L48	A- 2C		

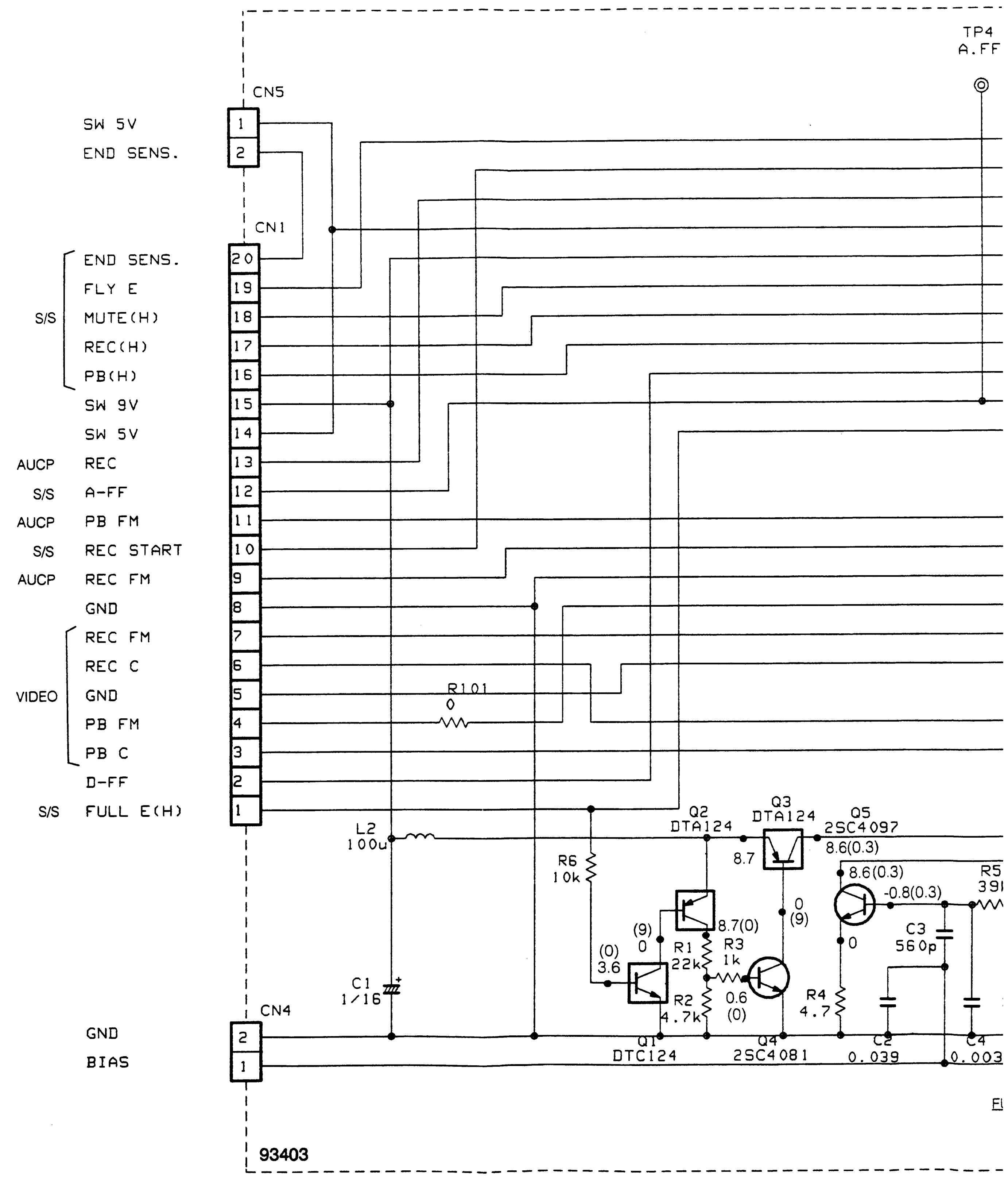


A- 3F	C153	A- 5I	C230	A- 6C	C307	A- 10C	L49	B- 4D
B- 3F	C154	A- 5H	C231	A- 6C	C308	A- 9C	L50	B- 5C
A- 3F	C155	A- 5I	C232	B- 7D	C309	A- 10C	L51	A- 8C
A- 4F	C156	A- 5H	C233	A- 7D	C310	B- 1J	L52	B- 7B
A- 4F	C157	A- 5I	C234	A- 7D	C311	A- 1H	L53	B- 7B
A- 4F	C158	A- 5H	C235	A- 7D	C312	A- 8G	L54	A- 9A
B- 5G	C159	A- 6H	C236	B- 8E	C313	A- 4K	L55	B- 10C
A- 5F	C160	A- 6H	C237	B- 8E	C314	A- 4J	L56	B- 8B
B- 5G	C161	A- 6H	C238	B- 8E	C315	A- 10D	L57	B- 10D
A- 5F	C162	A- 6I	C239	B- 10E	C316	A- 2E	L58	A- 3E
A- 6F	C163	A- 6I	C240	A- 9E	C317	B- 2E	L59	B- 2E
A- 6G	C164	A- 7I	C241	A- 9D	C318	A- 2E	L60	B- 6A
A- 6G	C165	A- 6H	C242	A- 6D	C319	A- 3E		
A- 6F	C166	A- 6I	C243	A- 6D	C320	A- 1E	DL1	A- 5A
A- 6F	C167	A- 7I	C244	A- 3D	C321	B- 2E	DL2	A- 7D
A- 6F	C168	A- 7J	C245	A- 3D	C322	B- 4J		
A- 7F	C169	A- 6H	C246	B- 3C	C323	B- 7C	TP1	B- 2B
A- 7G	C170	B- 6J	C247	B- 3D	C324	B- 7C	TP2	B- 2A
A- 4F	C171	A- 6J	C248	B- 3C	C325	A- 7A	TP3	B- 2A
B- 4F	C172	A- 7J	C249	B- 4D	C326	B- 6A	TP4	B- 2J
A- 4E	C173	A- 6I	C250	A- 4D	C327	B- 8D	TP5	B- 2I
A- 4E	C174	A- 6K	C251	A- 4C	C328	A- 2J	TP6	B- 1K
B- 4E	C175	A- 6K	C252	B- 4D	C329	B- 2K	TP7	B- 7F
A- 4E	C176	A- 7H	C253	B- 4C	C330	A- 7C	TP8	B- 9K
A- 5E	C177	B- 7H	C254	A- 4D			TP9	B- 9J
A- 5E	C178	A- 5K	C255	B- 4D	VC1	B- 9B	TP10	B- 4I
A- 5E	C179	A- 5K	C256	B- 5D	VC2	B- 7B	TP11	B- 6I
A- 6E	C180	A- 5K	C257	B- 5C	VC3	B- 7C	TP12	B- 7I
A- 6F	C181	A- 4J	C258	B- 5D			TP13	B- 4H
A- 6F	C182	A- 5I	C259	A- 9B	L1	A- 2D	TP14	B- 8D
A- 6E	C183	A- 5I	C260	A- 9C	L2	A- 2B	TP15	B- 9D
A- 7E	C184	B- 5I	C261	A- 9C	L3	B- 1C	TP16	B- 10D
A- 7F	C185	B- 5I	C262	B- 8C	L4	A- 2B	TP17	B- 3C
A- 10E	C186	A- 5I	C263	A- 8C	L5	B- 2J	TP18	B- 8C
B- 9E	C187	B- 5J	C264	A- 8C	L6	B- 1K	TP19	B- 8B
A- 9F	C188	B- 5J	C265	B- 8C	L7	B- 3G	TP20	B- 9B
A- 9G	C189	B- 4J	C266	B- 8C	L8	A- 7F	TP21	B- 10C
A- 9G	C190	B- 5J	C267	A- 8C	L9	A- 7G	TP22	B- 2B
A- 9H	C191	B- 5J	C268	B- 8B	L10	A- 8F	TP23	B- 2F
A- 9H	C192	B- 4J	C269	B- 6B	L11	A- 7E	TP24	B- 7G
A- 10H	C193	B- 5I	C270	B- 7C	L12	A- 8H	TP25	B- 10E
B- 10H	C194	A- 4C	C271	B- 7C	L13	A- 8H	TP26	A- 3K
A- 10H	C195	A- 4B	C272	A- 7B	L14	A- 8H	TP27	A- 2K
A- 9G	C196	B- 3B	C273	A- 8B	L15	A- 8G	TP28	A- 3K
B- 9G	C197	B- 4B	C274	A- 8B	L16	A- 8H	TP29	A- 2K
A- 9H	C198	B- 4A	C275	B- 8B	L17	A- 4G		
A- 9H	C199	A- 4B	C276	A- 7B	L18	A- 4F	K1	A- 2D
A- 10G	C200	A- 5B	C277	A- 7A	L19	A- 5F	K2	A- 2D
B- 9H	C201	B- 5B	C278	A- 6A	L20	A- 5G	K3	A- 9E
A- 10I	C202	A- 2B	C279	B- 8B	L21	A- 6G	K4	A- 9E
B- 7K	C203	B- 2B	C280	B- 8B	L22	A- 6G		
A- 8I	C204	B- 3C	C281	A- 7B	L23	A- 6G	TH1	A- 4I
B- 8J	C205	B- 3C	C282	A- 8B	L24	A- 6G	TH2	A- 3I
B- 8I	C206	B- 3B	C283	A- 8A	L25	A- 5F	TH3	A- 5J
A- 8J	C207	A- 3A	C284	A- 8A	L26	A- 4E	TH4	A- 8I
A- 7K	C208	A- 3B	C285	A- 8A	L27	A- 5F	TH5	A- 6D
B- 7K	C209	A- 3A	C286	B- 8B	L28	A- 5F	TH6	A- 7C
A- 8K	C210	A- 3A	C287	B- 8A	L29	A- 6F		
B- 8J	C211	A- 3A	C288	A- 9A	L30	A- 9E	FL1	A- 10F
A- 10J	C212	B- 3A	C289	B- 7A	L31	A- 9G	FL2	A- 8K
A- 10J	C213	B- 4B	C290	A- 9A	L32	A- 8I	FL3	A- 8J
A- 10J	C214	A- 2B	C291	A- 9A	L33	A- 7K	FL4	A- 7L
A- 9K	C215	B- 4B	C292	A- 9A	L34	A- 9I	FL5	A- 10K
A- 9K	C216	A- 4A	C293	A- 9A	L35	B- 7H	FL6	A- 7C
A- 8K	C217	B- 4B	C294	B- 10A	L36	B- 5I	FL7	A- 6B
A- 8J	C218	A- 4A	C295	A- 10A	L37	B- 5J	FL8	A- 7B
A- 9I	C219	A- 4A	C296	B- 9B	L38	B- 4H	FL9	A- 5D
A- 9J	C220	B- 4A	C297	B- 10A	L39	B- 2B		
B- 9I	C221	A- 3B	C298	A- 9B	L40	A- 4A	CN1	A- 1F
A- 9I	C222	A- 4A	C299	A- 10B	L41	A- 3A	CN2	A- 2L
A- 10I	C223	A- 6A	C300	B- 10C	L42	A- 3A		
A- 10I	C224	A- 7A	C301	B- 10C	L43	B- 3A	X1	A- 9B
A- 10I	C225	A- 6A	C302	B- 9B	L44	B- 5D		
A- 10J	C226	A- 7A	C303	B- 8B	L45	A- 6E		
A- 10J	C227	B- 5D	C304	B- 9B	L46	B- 4C		
A- 4H	C228	A- 5D	C305	A- 9B	L47	A- 5D		
B- 4H	C229	A- 5C	C306	A- 9B	L48	A- 2C		

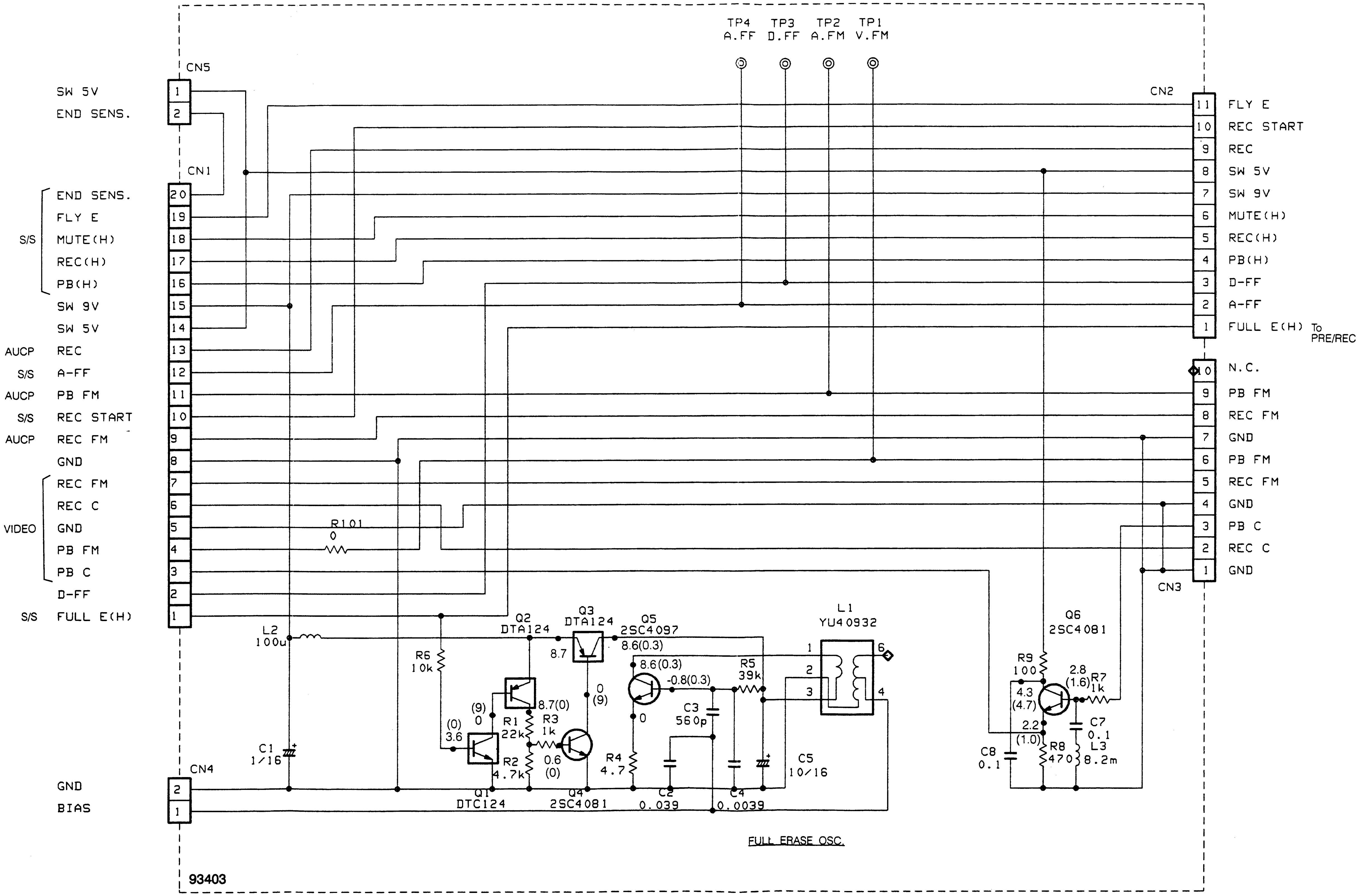
- Side B -



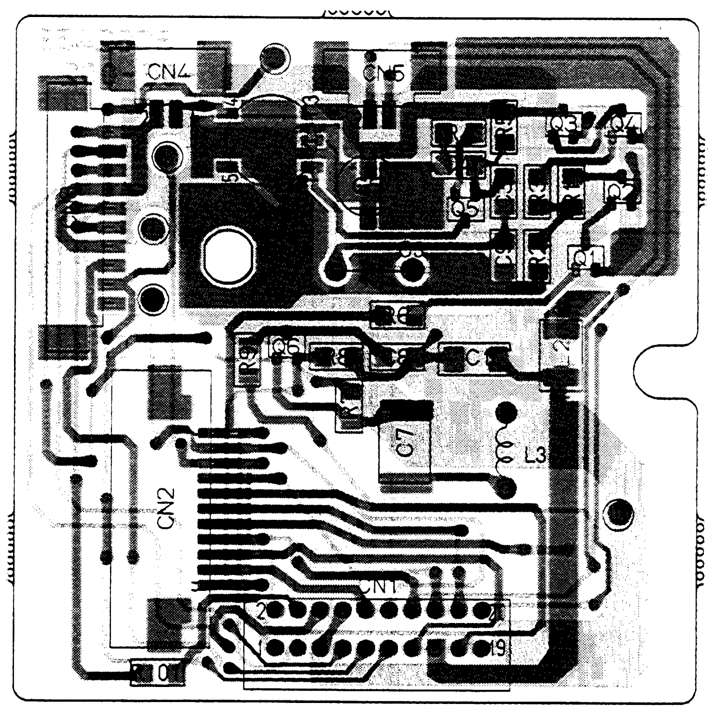
4.26 PRE/REC JUNC BOARD SCHEMATIC DIAGRAM 1 0


TP4
A.FF
CN5
SW 5V
END SENS.
CN1
S/S
END SENS.
FLY E
MUTE(H)
REC(H)
PB(H)
SW 9V
SW 5V
AUCP REC
S/S A-FF
AUCP PB FM
S/S REC START
AUCP REC FM
GND
VIDEO
REC FM
REC C
GND
PB FM
PB C
D-FF
S/S FULL E(H)
R101
0
L2
100u
C1
1/16
CN4
GND
BIAS
R6
10k
Q1
DTC124
Q2
DTA124
Q3
DTA124
Q4
2SC4081
Q5
2SC4097
R1
22k
R2
4.7k
R3
1k
R4
4.7
R5
39
C2
0.039
C3
560p
C4
0.003
(9)
0
(0)
3.6
8.7(0)
0.6
(0)
8.7
0
(9)
8.6(0.3)
8.6(0.3)
-0.8(0.3)
0
93403

4.26 PRE/REC JUNC BOARD SCHEMATIC DIAGRAM 1 0


TP4 A.FF
TP3 D.FF
TP2 A.FM
TP1 V.FM
CN5
SW 5V
END SENS.
CN1
S/S
END SENS.
FLY E
MUTE(H)
REC(H)
PB(H)
SW 9V
SW 5V
AUCP REC
S/S A-FF
AUCP PB FM
S/S REC START
AUCP REC FM
GND
VIDEO
REC FM
REC C
GND
PB FM
PB C
D-FF
S/S FULL E(H)
CN2
FLY E
REC START
REC
SW 5V
SW 9V
MUTE(H)
REC(H)
PB(H)
D-FF
A-FF
FULL E(H) To PRE/REC
N.C.
PB FM
REC FM
GND
PB FM
REC FM
GND
PB C
REC C
GND
CN3
R101 0
L2 100u
C1 1/16
R6 10k
Q2 DTA124
Q3 DTA124
Q5 2SC4097
8.7
8.6(0.3)
8.6(0.3)
-0.8(0.3)
R5 39k
(9) 0
(0) 3.6
8.7(0)
R1 22k
R3 1k
R2 4.7k
0.6 (0)
0 (9)
0
R4 4.7
C3 560p
Q1 DTC124
Q4 2SC4081
C2 0.039
C4 0.0039
C5 10/16
L1 YU40932
1 2 3 4 6
Q6 2SC4081
R9 100
4.3 (4.7)
2.8 (1.6)
R7 1k
2.2 (1.0)
C8 0.1
R8 470
C7 0.1
L3 8.2m
CN4
GND
BIAS
FULL ERASE OSC.
93403

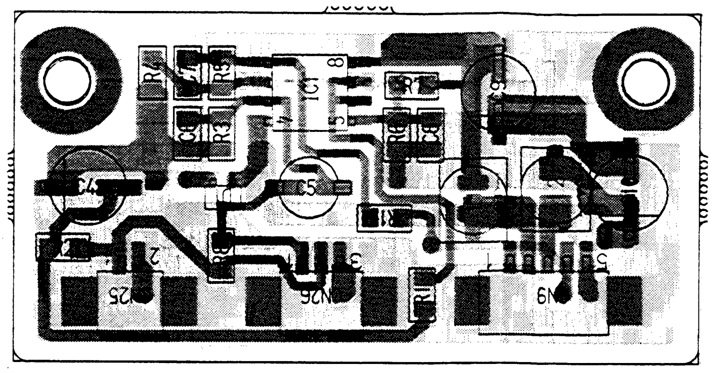
4.27 PRE/REC JUNC CIRCUIT BOARD



CN4
CN5
C7
L3
CN2
CN1
2
19

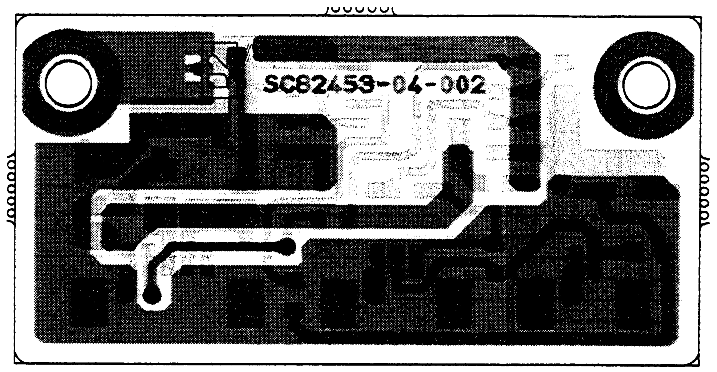
4.29 AU CIRCUIT BOARD

– Side A –



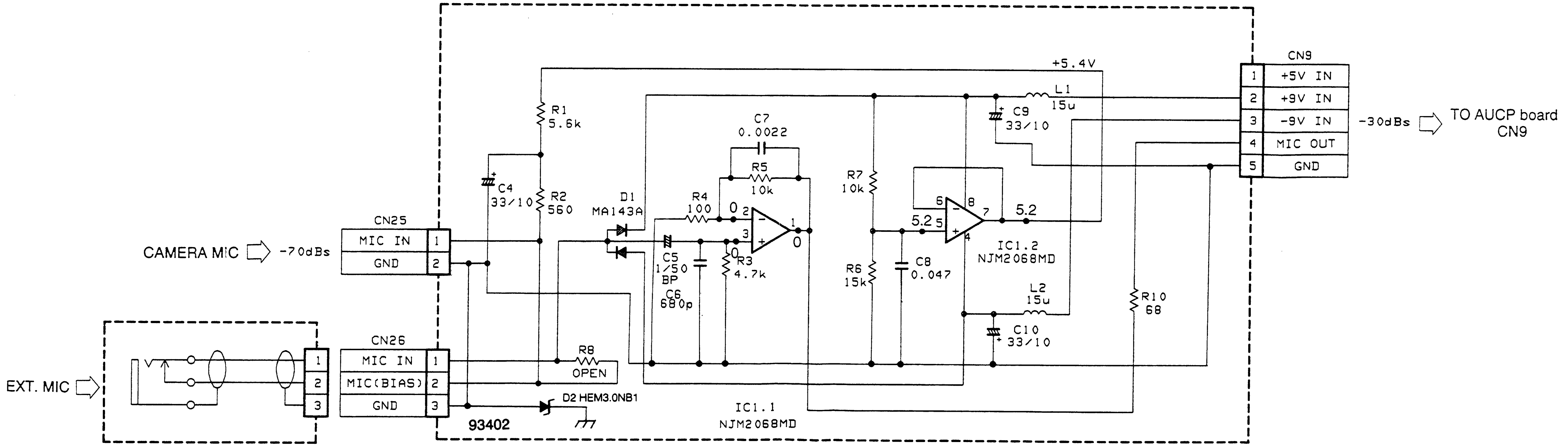
C1
C5
CN25
CN26
CN9

– Side B –



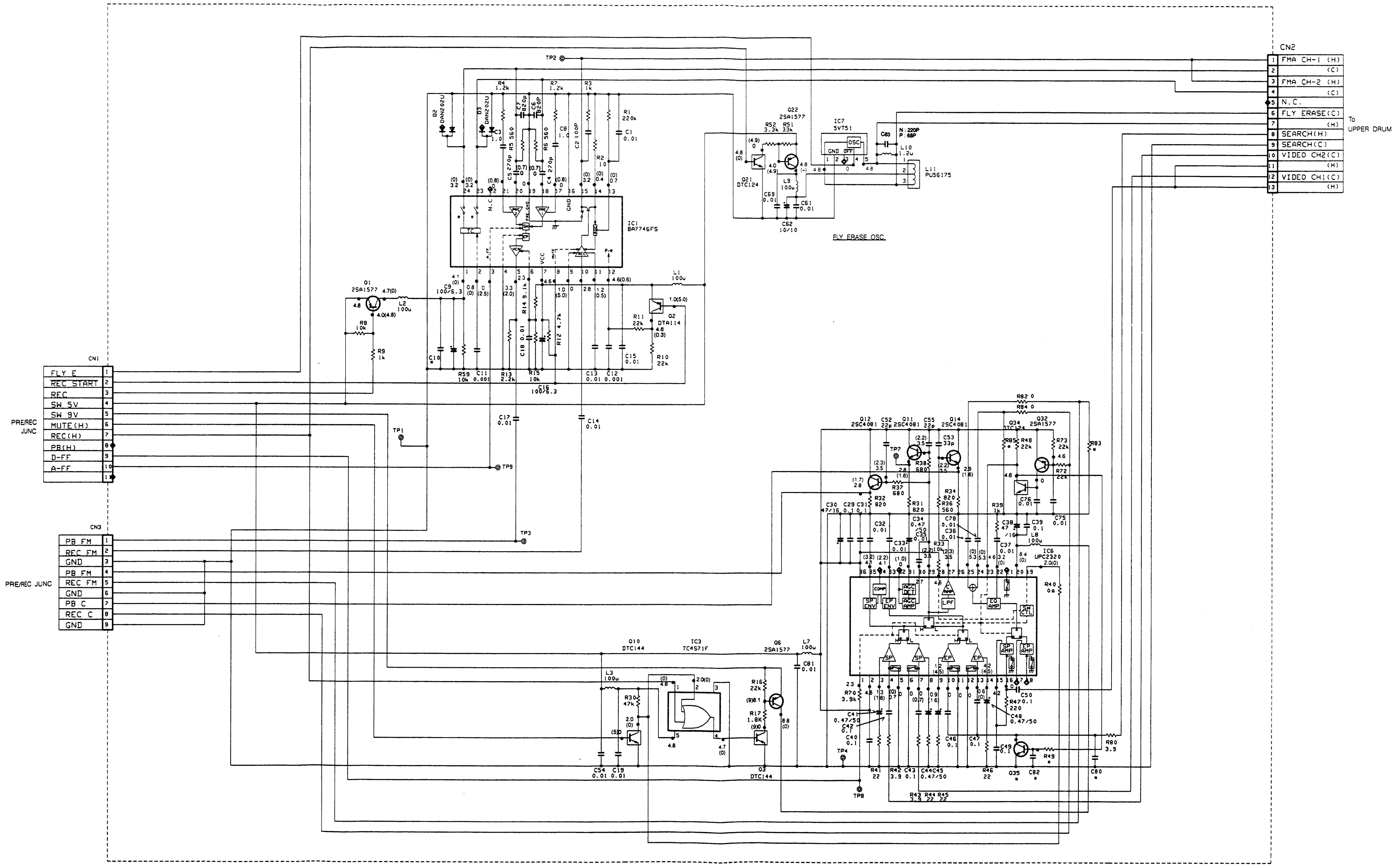
SC82453-04-002

4.28 AU BOARD SCHEMATIC DIAGRAM 1 1



CAMERA MIC
-70dBs
CN25
MIC IN
GND
EXT. MIC
CN26
MIC IN
MIC(BIAS)
GND
R1
5.6k
C4
33/10
R2
560
D1
MA143A
C5
1/50
BP
C6
680p
R4
100
R3
4.7k
C7
0.0022
R5
10k
R7
10k
R6
15k
C8
0.047
R8
OPEN
D2 HEM3.0NB1
IC1.1
NJM2068MD
IC1.2
NJM2068MD
+5.4V
L1
15u
C9
33/10
L2
15u
C10
33/10
R10
68
5.2
5.2
0
93402
CN9
+5V IN
+9V IN
-9V IN
MIC OUT
GND
-30dBs
TO AUCP board
CN9

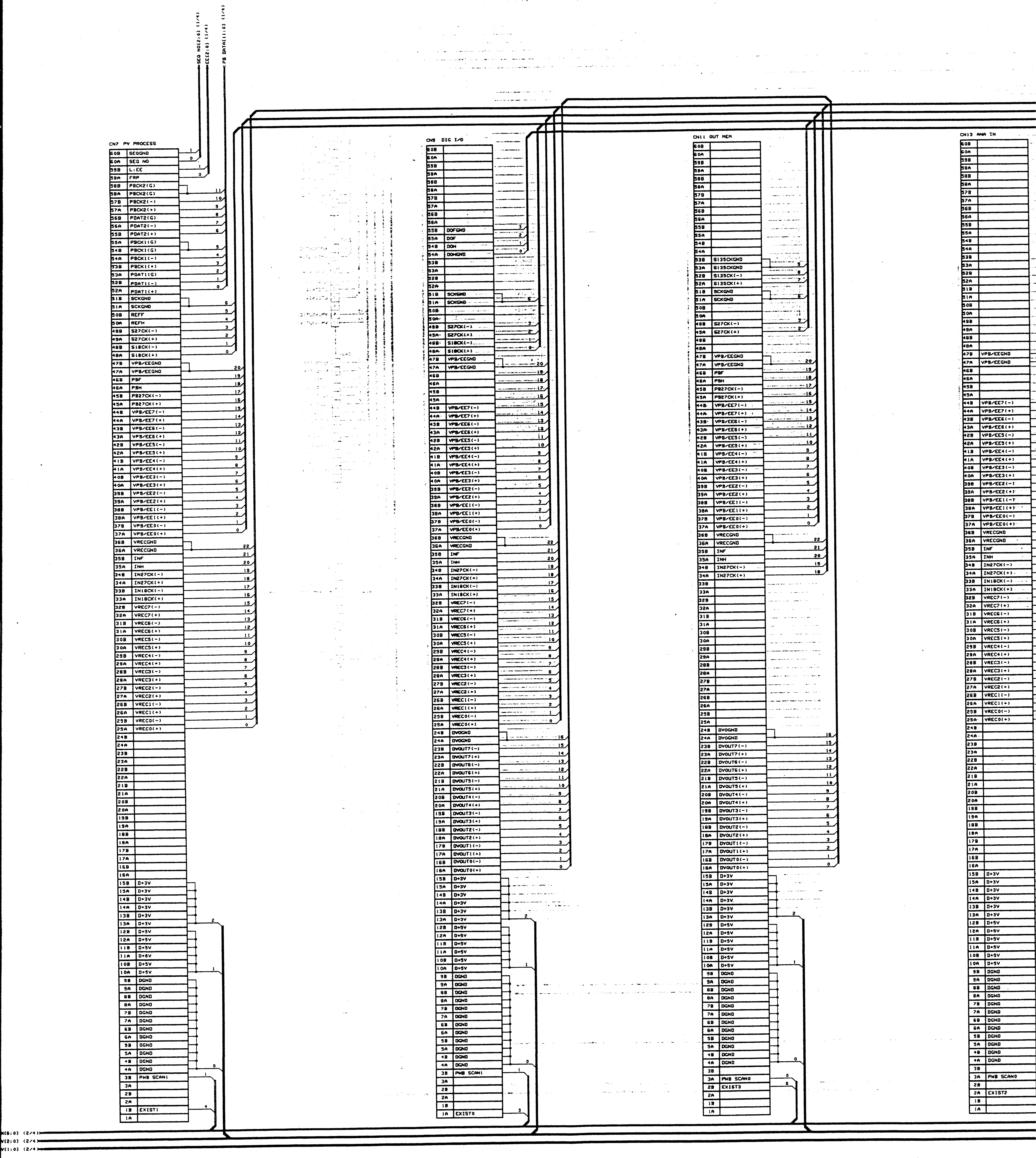
4.30 PRE/REC BOARD SCHEMATIC DIAGRAM 1 2

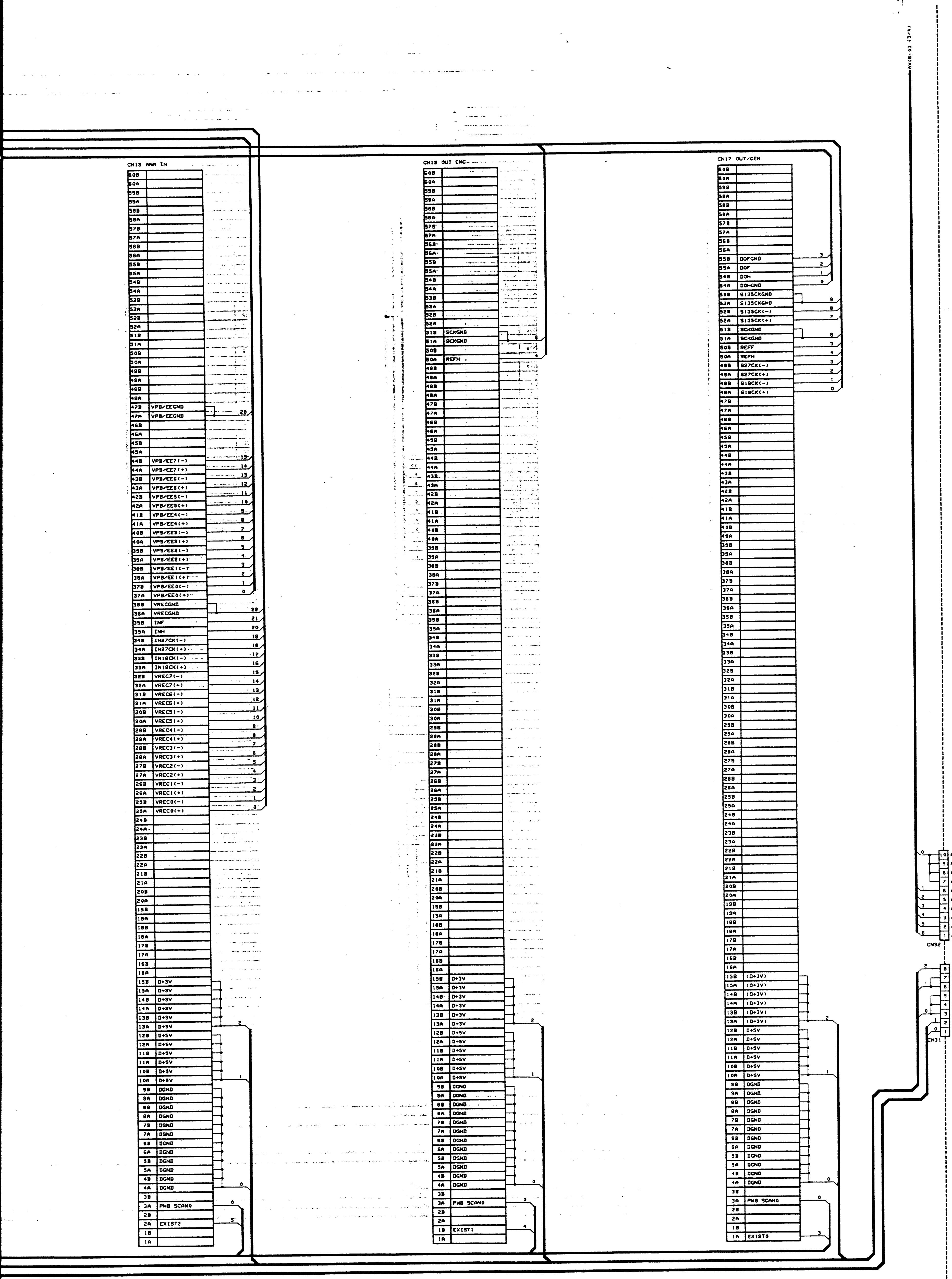

6
5
4
3
2
1
CN1
FLY E
REC START
REC
SW 5V
SW 9V
MUTE(H)
REC(H)
PB(H)
D-FF
A-FF
PRE/REC JUNC
CN3
PB FM
REC FM
GND
PB FM
REC FM
GND
PB C
REC C
GND
PRE/REC JUNC
CN2
FMA CH-1 (H)
(C)
FMA CH-2 (H)
(C)
N.C.
FLY ERASE(C)
(H)
SEARCH(H)
SEARCH(C)
VIDEO CH2(C)
(H)
VIDEO CH1(C)
(H)
To UPPER DRUM
TP1
TP2
TP3
TP4
TP7
TP8
TP9
Q1 2SA1577
Q2 DTA114
Q3 DTC144
Q6 2SA1577
Q10 DTC144
Q11 2SC4081
Q12 2SC4081
Q14 2SC4081
Q21 DTC124
Q22 2SA1577
Q32 2SA1577
Q34 DTC124
Q35
IC1 BA7746FS
IC3 TC4571F
IC6 UPC2320
IC7 5VT51
L1 100u
L2 100u
L3 100u
L7 100u
L8 100u
L9 100u
L10 1.2u
L11 PU56175
N:220P P:68P
D2 DAN202U
D3 DAN202U
FLY ERASE OSC
OSC
GND OFF
SP ENV
EP ENV
COMP
ACC DET
ACC AMP
LPF
EQ AMP
SW CTL
SP AMP
EP AMP
SP
EP
VCC
GND
N.C.
R82 0
R84 0
R83 *
R85 *
R49 *
C80 *
C82 *
C10 *

Revised in Feb. 1996.

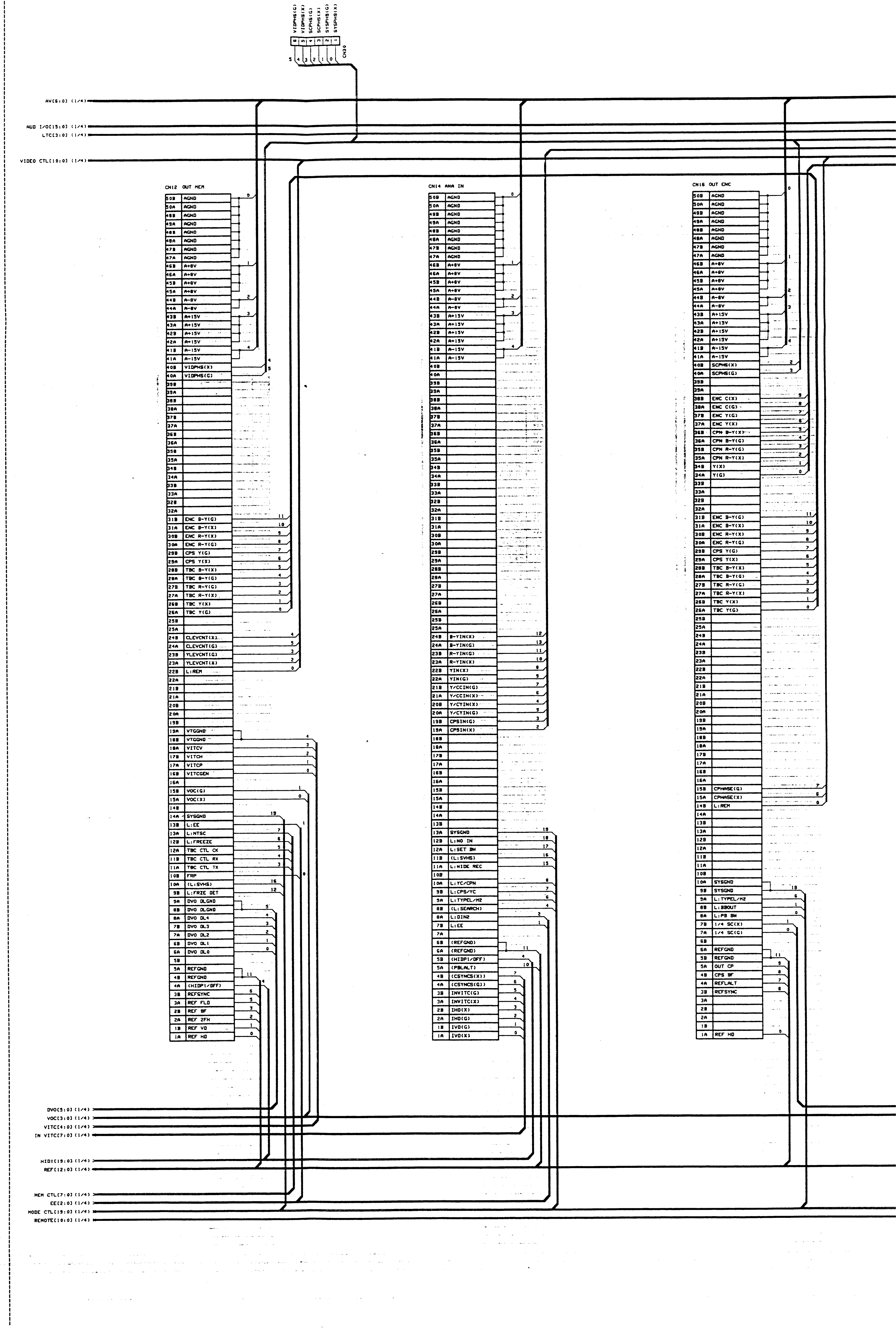
NOTE: PARTS WITH * MARK ARE OPEN CIRCUITS.

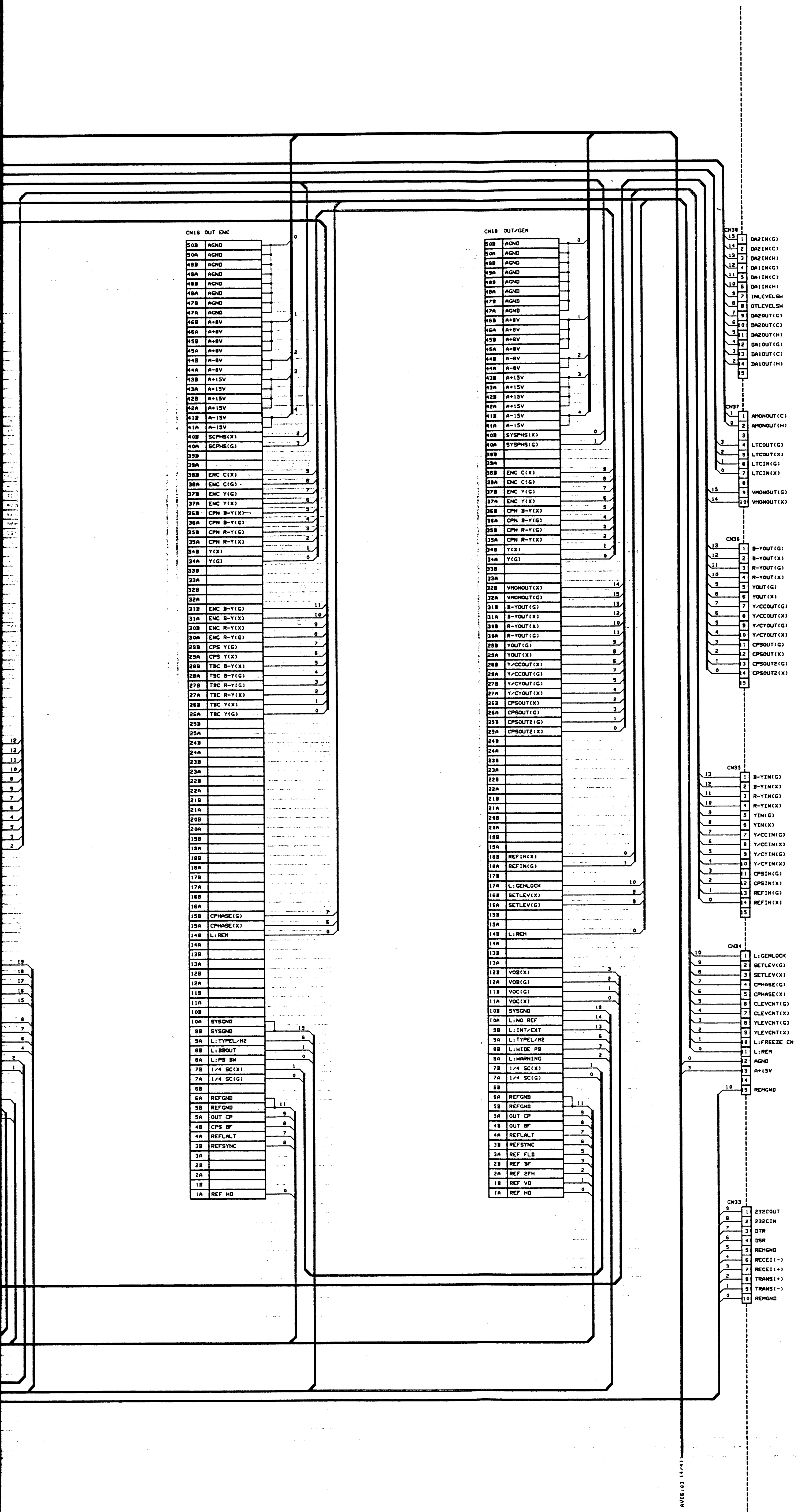
— DIAGRAM 4/4 —


SEQ NO[2:0] (1/4)
EE[2:0] (1/4)
PB DATA[11:0] (1/4)
CN7 PV PROCESS
CN9 DIG I/O
CN11 OUT MEM
CN13 ANA IN
SEQGND
SEQ NO
L:EE
FRP
PBCK2(G)
PBCK2(-)
PBCK2(+)
PDAT2(G)
PDAT2(-)
PDAT2(+)
PBCK1(G)
PBCK1(-)
PBCK1(+)
PDAT1(G)
PDAT1(-)
PDAT1(+)
SCKGND
REFF
REFH
S27CK(-)
S27CK(+)
S18CK(-)
S18CK(+)
DOFGND
DOF
DOH
DOHGND
S135CKGND
S135CK(-)
S135CK(+)
VPB/EEGND
PBF
PBH
PB27CK(-)
PB27CK(+)
VPB/EE7(-)
VPB/EE7(+)
VPB/EE0(-)
VPB/EE0(+)
VRECGND
INF
INH
IN27CK(-)
IN27CK(+)
IN18CK(-)
IN18CK(+)
VREC7(-)
VREC7(+)
VREC0(-)
VREC0(+)
DVOGND
DVOUT7(-)
DVOUT7(+)
DVOUT0(-)
DVOUT0(+)
D+3V
D+5V
DGND
PHB SCAN1
PHB SCAN0
EXIST0
EXIST1
EXIST2
EXIST3
N[6:0] (2/4)
V[2:0] (2/4)
V[1:0] (2/4)


AV(6:0) (3/4)
CN13 ANA IN
47B VPB/EEGND
47A VPB/EEGND
44B VPB/EE7(−)
44A VPB/EE7(+)
43B VPB/EE6(−)
43A VPB/EE6(+)
42B VPB/EE5(−)
42A VPB/EE5(+)
41B VPB/EE4(−)
41A VPB/EE4(+)
40B VPB/EE3(−)
40A VPB/EE3(+)
39B VPB/EE2(−)
39A VPB/EE2(+)
38B VPB/EE1(−)
38A VPB/EE1(+)
37B VPB/EE0(−)
37A VPB/EE0(+)
36B VRECGND
36A VRECGND
35B INF
35A INH
34B IN27CK(−)
34A IN27CK(+)
33B IN18CK(−)
33A IN18CK(+)
32B VREC7(−)
32A VREC7(+)
31B VREC6(−)
31A VREC6(+)
30B VREC5(−)
30A VREC5(+)
29B VREC4(−)
29A VREC4(+)
28B VREC3(−)
28A VREC3(+)
27B VREC2(−)
27A VREC2(+)
26B VREC1(−)
26A VREC1(+)
25B VREC0(−)
25A VREC0(+)
15B D+3V
15A D+3V
14B D+3V
14A D+3V
13B D+3V
13A D+3V
12B D+5V
12A D+5V
11B D+5V
11A D+5V
10B D+5V
10A D+5V
9B DGND
9A DGND
8B DGND
8A DGND
7B DGND
7A DGND
6B DGND
6A DGND
5B DGND
5A DGND
4B DGND
4A DGND
3A PWB SCAN0
2A EXIST2
CN15 OUT ENC
51B SCKGND
51A SCKGND
50A REFH
15B D+3V
15A D+3V
14B D+3V
14A D+3V
13B D+3V
13A D+3V
12B D+5V
12A D+5V
11B D+5V
11A D+5V
10B D+5V
10A D+5V
9B DGND
9A DGND
8B DGND
8A DGND
7B DGND
7A DGND
6B DGND
6A DGND
5B DGND
5A DGND
4B DGND
4A DGND
3A PWB SCAN0
1B EXIST1
CN17 OUT/GEN
55B DOFGND
55A DOF
54B DOH
54A DOHGND
53B S135CKGND
53A S135CKGND
52B S135CK(−)
52A S135CK(+)
51B SCKGND
51A SCKGND
50B REFF
50A REFH
49B S27CK(−)
49A S27CK(+)
48B S18CK(−)
48A S18CK(+)
15B (D+3V)
15A (D+3V)
14B (D+3V)
14A (D+3V)
13B (D+3V)
13A (D+3V)
12B D+5V
12A D+5V
11B D+5V
11A D+5V
10B D+5V
10A D+5V
9B DGND
9A DGND
8B DGND
8A DGND
7B DGND
7A DGND
6B DGND
6A DGND
5B DGND
5A DGND
4B DGND
4A DGND
3A PWB SCAN0
1A EXIST0
10 AGND
9 AGND
8 AGND
7 AGND
6 A+8V
5 A−8V
4 A+15V
3 A−15V
2 A+22V
1 A−22V
CN32
8 D+3V
7 D+5V
6 D+5V
5 DGND
4 DGND
3 DGND
2 M+18V
1 MGND
CN31

— DIAGRAM 3/4 —


CN30
VIDPHS(G)
VIDPHS(X)
SCPHS(G)
SCPHS(X)
SYSPHS(G)
SYSPHS(X)
AV[6:0] (1/4)
AUD I/O[15:0] (1/4)
LTC[3:0] (1/4)
VIDEO CTL[10:0] (1/4)
CN12 OUT MEM
AGND
A+8V
A-8V
A+15V
A-15V
VIDPHS(X)
VIDPHS(G)
ENC B-Y(G)
ENC B-Y(X)
ENC R-Y(X)
ENC R-Y(G)
CPS Y(G)
CPS Y(X)
TBC B-Y(X)
TBC B-Y(G)
TBC R-Y(G)
TBC R-Y(X)
TBC Y(X)
TBC Y(G)
CLEVCNT(X)
CLEVCNT(G)
YLEVCNT(G)
YLEVCNT(X)
L:REM
VTGGND
VITCV
VITCH
VITCP
VITCGEN
VOC(G)
VOC(X)
SYSGND
L:EE
L:NTSC
L:FREEZE
TBC CTL CK
TBC CTL RX
TBC CTL TX
FRP
(L:SVHS)
L:FRZE DET
DVO DLGND
DVO DL4
DVO DL3
DVO DL2
DVO DL1
DVO DL0
REFGND
(HIDP1/OFF)
REFSYNC
REF FLD
REF BF
REF 2FH
REF VD
REF HD
CN14 ANA IN
B-YIN(X)
B-YIN(G)
R-YIN(G)
R-YIN(X)
YIN(X)
YIN(G)
Y/CCIN(G)
Y/CCIN(X)
Y/CYIN(X)
Y/CYIN(G)
CPSIN(G)
CPSIN(X)
L:NO IN
L:SET BM
(L:SVHS)
L:WIDE REC
L:YC/CPN
L:CPS/YC
L:TYPEL/M2
(L:SEARCH)
L:DIN2
L:EE
(REFGND)
(HIDP1/OFF)
(PBLALT)
(CSYNCS(X))
(CSYNCS(G))
INVITC(G)
INVITC(X)
IHD(X)
IHD(G)
IVD(G)
IVD(X)
CN16 OUT ENC
SCPHS(X)
SCPHS(G)
ENC C(X)
ENC C(G)
ENC Y(G)
ENC Y(X)
CPN B-Y(X)
CPN B-Y(G)
CPN R-Y(G)
CPN R-Y(X)
Y(X)
Y(G)
CPHASE(G)
CPHASE(X)
L:REM
SYSGND
L:TYPEL/M2
L:BBOUT
L:PB BM
1/4 SC(X)
1/4 SC(G)
REFGND
OUT CP
CPS BF
REFLALT
REFSYNC
REF HD
DVO[5:0] (1/4)
VOC[3:0] (1/4)
VITC[4:0] (1/4)
IN VITC[7:0] (1/4)
HIDI[19:0] (1/4)
REF[12:0] (1/4)
MEM CTL[7:0] (1/4)
EE[2:0] (1/4)
MODE CTL[19:0] (1/4)
REMOTE[10:0] (1/4)



CN16 OUT ENC
AGND
A+8V
A-8V
A+15V
A-15V
SCPHS(X)
SCPHS(G)
ENC C(X)
ENC C(G)
ENC Y(G)
ENC Y(X)
CPN B-Y(X)
CPN B-Y(G)
CPN R-Y(G)
CPN R-Y(X)
Y(X)
Y(G)
ENC B-Y(G)
ENC B-Y(X)
ENC R-Y(X)
ENC R-Y(G)
CPS Y(G)
CPS Y(X)
TBC B-Y(X)
TBC B-Y(G)
TBC R-Y(G)
TBC R-Y(X)
TBC Y(X)
TBC Y(G)
CPHASE(G)
CPHASE(X)
L:REM
SYSGND
L:TYPEL/M2
L:BBOUT
L:PB BW
1/4 SC(X)
1/4 SC(G)
REFGND
OUT CP
CPS BF
REFLALT
REFSYNC
REF HD
CN18 OUT/GEN
SYSPHS(X)
SYSPHS(G)
VMONOUT(X)
VMONOUT(G)
B-YOUT(G)
B-YOUT(X)
R-YOUT(X)
R-YOUT(G)
YOUT(G)
YOUT(X)
Y/CCOUT(X)
Y/CCOUT(G)
Y/CYOUT(G)
Y/CYOUT(X)
CPSOUT(X)
CPSOUT(G)
CPSOUT2(G)
CPSOUT2(X)
REFIN(X)
REFIN(G)
L:GENLOCK
SETLEV(X)
SETLEV(G)
VOB(X)
VOB(G)
VOC(G)
VOC(X)
L:NO REF
L:INT/EXT
L:WIDE PB
L:WARNING
REF FLD
REF BF
REF 2FH
REF VD
CN38
DA2IN(G)
DA2IN(C)
DA2IN(H)
DA1IN(G)
DA1IN(C)
DA1IN(H)
INLEVELSW
OTLEVELSW
DA2OUT(G)
DA2OUT(C)
DA2OUT(H)
DA1OUT(G)
DA1OUT(C)
DA1OUT(H)
CN37
AMONOUT(C)
AMONOUT(H)
LTCOUT(G)
LTCOUT(X)
LTCIN(G)
LTCIN(X)
VMONOUT(G)
VMONOUT(X)
CN36
B-YOUT(G)
B-YOUT(X)
R-YOUT(G)
R-YOUT(X)
YOUT(G)
YOUT(X)
Y/CCOUT(G)
Y/CCOUT(X)
Y/CYOUT(G)
Y/CYOUT(X)
CPSOUT(G)
CPSOUT(X)
CPSOUT2(G)
CPSOUT2(X)
CN35
B-YIN(G)
B-YIN(X)
R-YIN(G)
R-YIN(X)
YIN(G)
YIN(X)
Y/CCIN(G)
Y/CCIN(X)
Y/CYIN(G)
Y/CYIN(X)
CPSIN(G)
CPSIN(X)
REFIN(G)
REFIN(X)
CN34
L:GENLOCK
SETLEV(G)
SETLEV(X)
CPHASE(G)
CPHASE(X)
CLEVCNT(G)
CLEVCNT(X)
YLEVCNT(G)
YLEVCNT(X)
L:FREEZE EN
L:REM
AGND
A+15V
REMGND
CN33
232COUT
232CIN
DTR
DSR
REMGND
RECEI(-)
RECEI(+)
TRANS(+)
TRANS(-)
REMGND
AV[6:0] (4/4)

4.33 S/S CIRCUIT BOARD

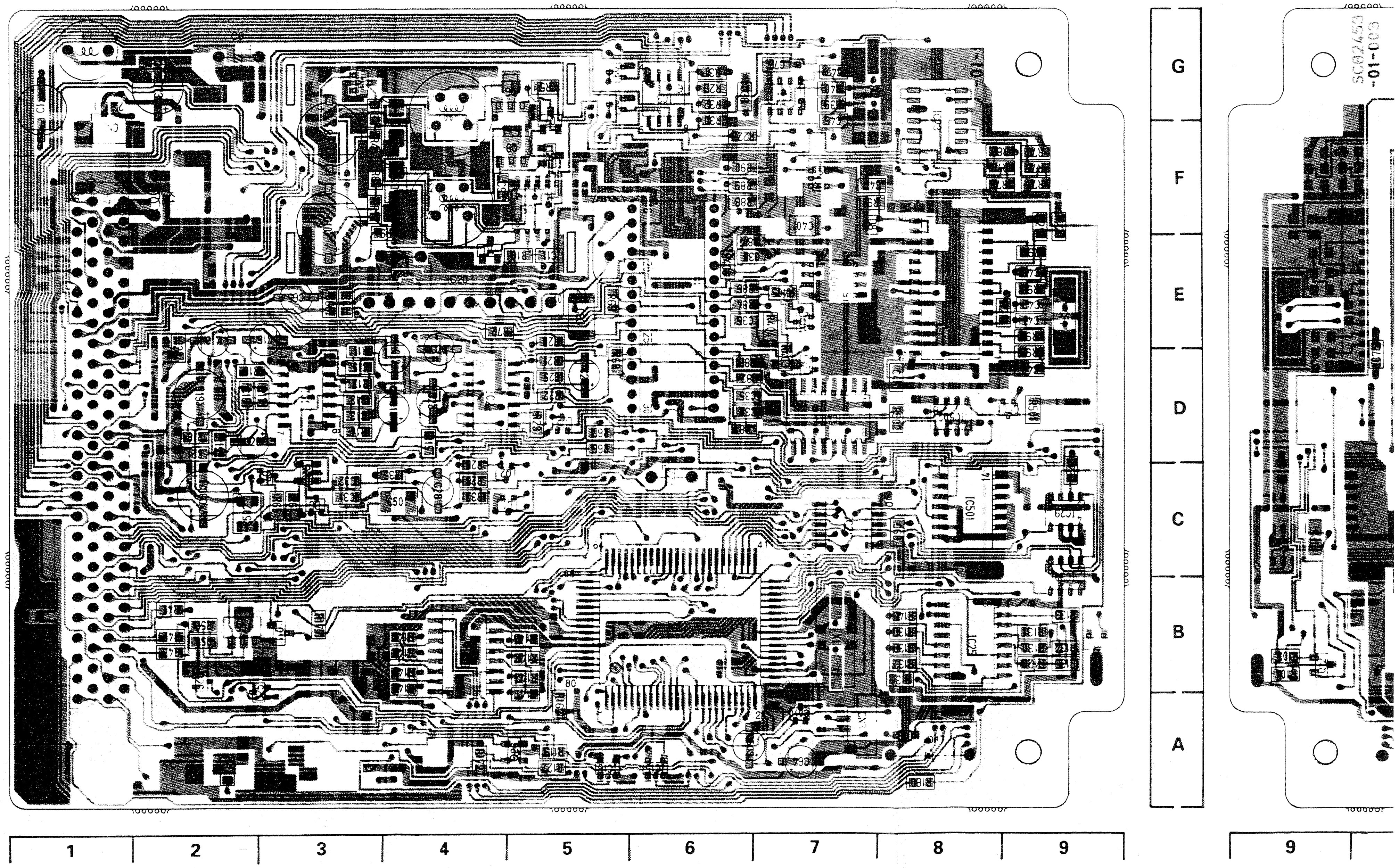
● ADDRESS TABLE OF BOARD PARTS

Each address may have an address error by one interval.

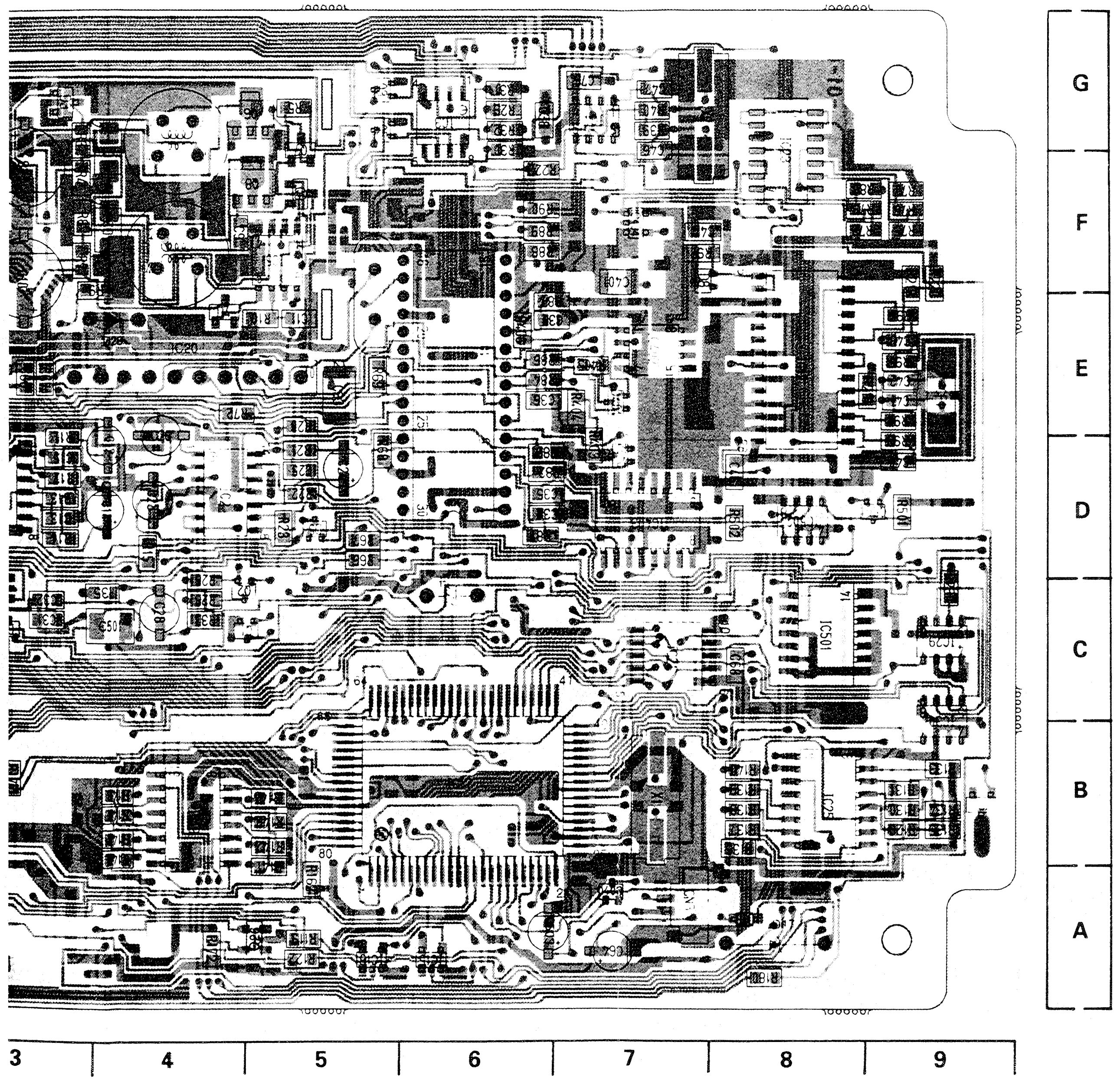
A-1C
Side — A; first character after the hyphen — X axis; second character — Y axis

IC1	A- 3D
IC2	A- 4D
IC3	A- 6G
IC4	A- 7G
IC5	A- 5F
IC6	A- 2B
IC7	A- 6D
IC12	A- 8D
IC15	A- 6A
IC16	A- 5A
IC17	A- 6B
IC18	B- 7B
IC19	A- 4B
IC20	A- 3E
IC21	A- 7C
IC23	A- 8G
IC24	B- 7A
IC25	A- 8B
IC27	B- 6F
IC29	A- 9C
IC30	A- 9C
IC100	B- 3G
IC402	A- 7E
IC403	A- 7D
IC404	A- 7F
IC501	A- 8C
IC502	A- 8D
Q1	A- 5C
Q2	A- 5C
Q3	A- 5G
Q5	A- 5G
Q6	A- 5G
Q7	A- 5G
Q8	A- 5F
Q9	A- 5F
Q11	A- 3B
Q12	B- 9B
Q13	B- 7A
Q14	B- 6B
Q15	B- 7A
Q18	B- 3A
Q19	B- 4A
Q20	B- 5A
Q25	A- 3D
Q26	A- 5A
Q29	B- 8F
Q30	B- 8E
Q501	A- 9D
Q601	B- 3D
Q602	B- 2D
D1	A- 4G
D2	A- 4F
D3	A- 3G
D4	A- 4E
D5	A- 5D
D6	A- 3C
D7	A- 3C
D8	A- 7F
D17	A- 8A
D18	A- 8A
D25	A- 3B
D26	A- 2B
D28	A- 4E
D30	A- 9B
D31	B- 3B
D401	A- 7E
D402	A- 7D
D403	A- 7A
D410	B- 3A
R1	B- 2C
R2	B- 2D
R3	A- 3G
R4	A- 3F
R5	A- 5G
R6	B- 5F
R7	A- 3F
R8	A- 3F
R9	A- 4F
R10	A- 5E
R11	A- 3E
R12	A- 3D
R13	A- 3D
R14	A- 3D
R15	A- 4D
R16	A- 2D
R17	A- 3D
R18	A- 2D
R19	A- 2D
R20	A- 5E
R21	A- 5D
R22	A- 5D
R23	A- 5D
R24	B- 4D
R25	B- 4D
R26	A- 4D
R27	B- 4D
R28	A- 4C
R29	A- 6G
R30	A- 6G
R31	A- 6G
R32	A- 6G
R33	A- 4C
R35	A- 4C
R36	B- 4C
R39	A- 7G
R40	A- 7G
R41	A- 2B
R42	A- 2B
R43	A- 2B
R44	A- 2A
R45	B- 2D
R46	B- 2D
R50	B- 2D
R51	B- 2D
R52	B- 2A
R53	B- 1B
R56	A- 2B
R58	A- 2B
R64	A- 3C
R65	A- 3C
R66	A- 5D
R67	A- 5D
R68	A- 5D
R69	A- 5E
R72	A- 4E
R73	B- 3C
R75	A- 9F
R76	A- 9F
R77	A- 9F
R78	A- 9F
R79	A- 9F
R80	A- 9F
R81	A- 6D
R82	A- 6D
R83	A- 6D
R84	A- 6E
R86	A- 6E
R87	A- 7E
R88	A- 6F
R89	A- 6F
R90	A- 6F
R92	A- 7F
R93	A- 9D
R94	A- 9E
R95	A- 9E
R96	A- 9E
R103	B- 9B
R104	B- 9B
R105	B- 6A
R106	B- 6A
R107	B- 5A
R108	B- 5A
R109	B- 6B
R111	B- 5B
R112	B- 5B
R113	B- 7F
R114	B- 4A
R115	B- 5A
R116	B- 3D
R117	B- 5A
R118	B- 6B
R119	A- 5A
R120	B- 5A
R121	B- 5A
R122	A- 5A
R123	B- 3B
R124	B- 3B
R125	B- 3B
R126	B- 7B
R127	B- 2F
R128	B- 7A
R129	A- 9B
R130	A- 9B
R131	A- 9B
R133	A- 9B
R134	A- 9B
R135	A- 9B
R136	A- 8B
R137	A- 8B
R138	A- 8B
R139	A- 8B
R140	A- 8B
R141	A- 5B
R142	A- 5B
R143	A- 5B
R144	A- 5B
R145	A- 4B
R146	A- 4B
R147	A- 4B
R148	A- 4B
R149	B- 4B
R150	B- 4B
R151	B- 4B
R152	B- 4B
R153	B- 4B
R154	B- 4B
R155	B- 4B
R156	B- 4B
R157	B- 8B
R158	B- 8B
R159	B- 8C
R160	B- 8C
R161	B- 6C
R162	A- 5A
R163	B- 5C
R164	B- 5C
R165	B- 5C
R166	B- 5C
R167	B- 5C
R168	B- 5C
R169	B- 6C
R170	B- 6C
R171	B- 6C
R172	A- 4A
R173	B- 2C
R174	B- 2C
R175	B- 2C
R176	B- 2C
R177	A- 3B
R178	B- 2B
R179	B- 2B
R180	A- 8A
R181	B- 3C
R182	B- 3C
R183	B- 3B
R184	B- 3B
R185	B- 3C
R186	B- 3D
R187	B- 3D
R188	B- 3D
R189	B- 2C
R190	B- 3C
R192	B- 7F
R193	B- 7F
R199	B- 2A
R208	B- 8F
R209	B- 8F
R210	B- 5A
R211	B- 5B
R212	B- 1E
R213	B- 1E
R214	B- 3B
R215	B- 2B
R218	A- 9E
R219	A- 9F
R220	A- 9F
R223	A- 6F
R224	B- 6B
R228	B- 5B
R230	A- 9D
R231	B- 6E
R402	B- 7E
R403	A- 7D
R404	A- 7E
R405	A- 7E
R406	A- 6E
R407	B- 7D
R501	A- 9D
R502	A- 8D
R503	B- 4E
R601	B- 3D
R602	B- 3D
R603	B- 7B
R604	B- 6D
R610	B- 3B
R611	B- 3A
R612	B- 4B
VR1	B- 2C
VR2	B- 7E
VR3	B- 6A
VR4	B- 7F
C1	A- 1G
C2	B- 1G
C3	B- 1F
C4	B- 2C
C5	B- 2E
C6	A- 3G
C7	B- 5G
C8	A- 3F
C9	A- 4F
C10	A- 3F
C11	A- 5E
C12	A- 4D
C13	A- 3D
C14	A- 4D
C15	A- 3D
C16	A- 3E
C17	A- 2E
C18	A- 2D
C19	A- 2D
C20	A- 2D
C21	A- 2D
C22	A- 2E
C23	A- 4D
C24	A- 5D
C25	A- 5D
C26	A- 4E
C27	B- 4D
C28	A- 4C
C30	A- 2C
C31	A- 3C
C32	A- 3C
C33	A- 5E
C34	A- 6D
C35	A- 6D
C36	A- 6E
C37	A- 7E
C38	A- 6G
C40	A- 9D
C41	A- 9E
C42	A- 9E
C43	A- 9E
C44	A- 7F
C45	A- 8D
C46	A- 7G
C47	A- 7G
C48	B- 2D
C49	B- 2D
C61	B- 5B
C62	B- 7B
C63	B- 7B
C64	A- 7A
C65	A- 3E
C66	A- 3E
C67	A- 3E
C68	A- 8C
C69	B- 8F
C70	A- 6C
C71	B- 3B
C72	B- 2B
C73	A- 2G
C74	B- 6D
C75	B- 8D
C76	A- 7G
C77	B- 7B
C100	B- 4G
C101	B- 3G
C401	A- 7F
C402	B- 6D
C404	B- 7D
C501	A- 4C
C502	A- 2C
C503	A- 6A
L1	A- 1G
TP1	B- 1G
TP2	B- 1G
TP3	B- 8B
TP4	B- 8B
TP5	B- 9C
TP6	B- 6A
TP7	B- 6D
TP8	B- 3B
TP9	B- 2B
TP10	B- 8E
TP11	B- 2D
TP12	B- 7E
TP13	B- 1D
TP14	B- 2E
CN1	A- 1A
CN2	A- 1F
CN3	A- 7A
K1	A- 2F
T1	A- 4G
T2	A- 4F
TH1	A- 5F
CF1	A- 9E
X1	A- 7B
X2	A- 7G

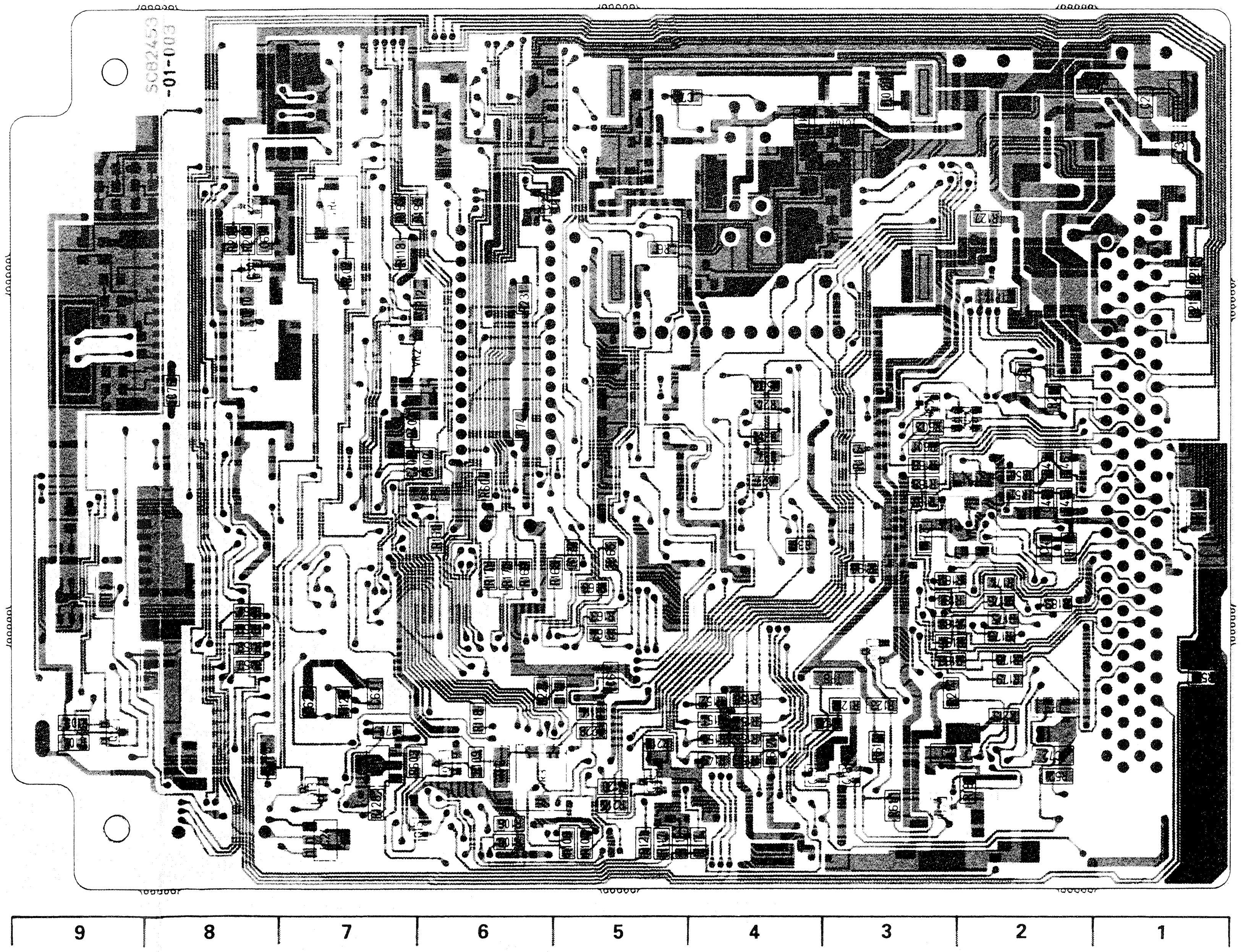
– Side A –



– Side A –


G
F
E
D
C
B
A
3
4
5
6
7
8
9
IC501

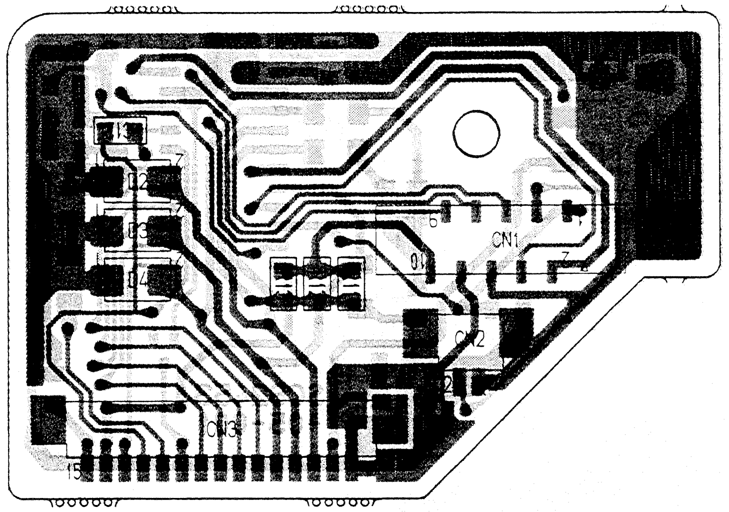
– Side B –


SCB2453
-01-005
9
8
7
6
5
4
3
2
1

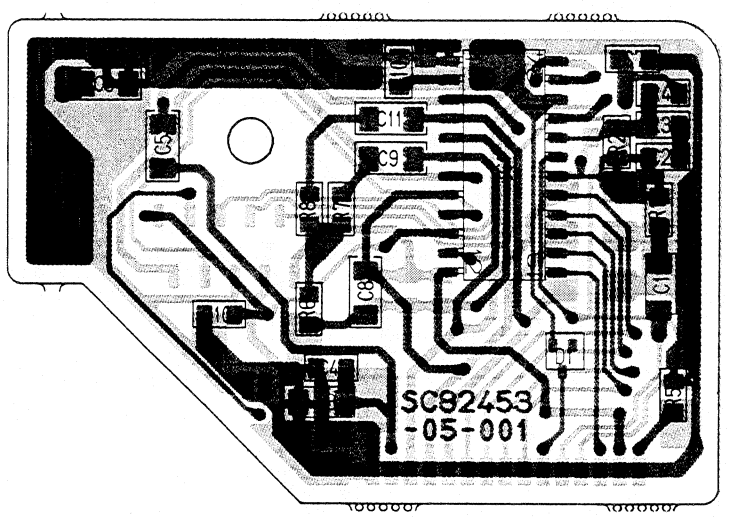
4.35 MDA/M JUNC CIRCUIT BOARDS

– MDA –

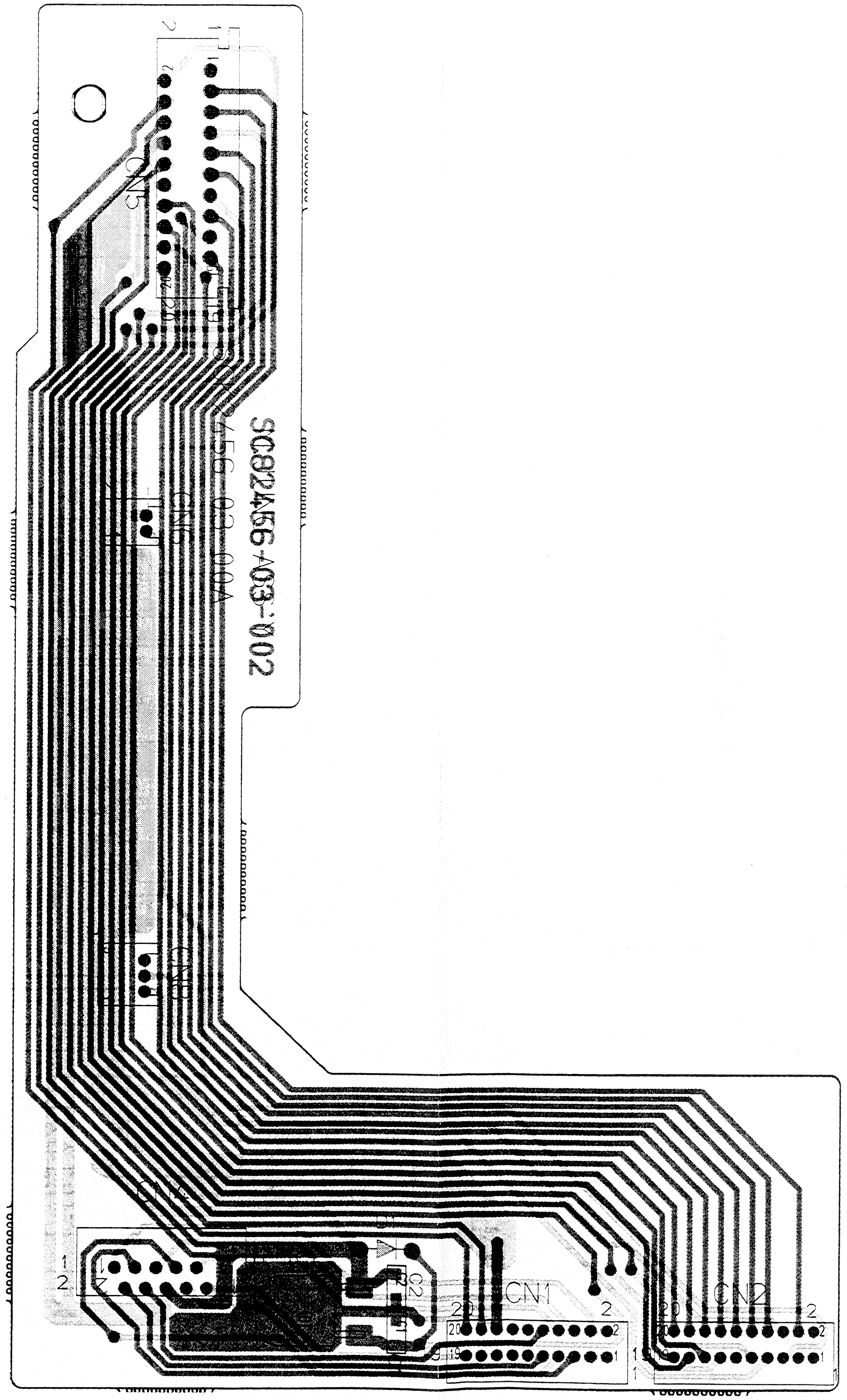
– Side A –



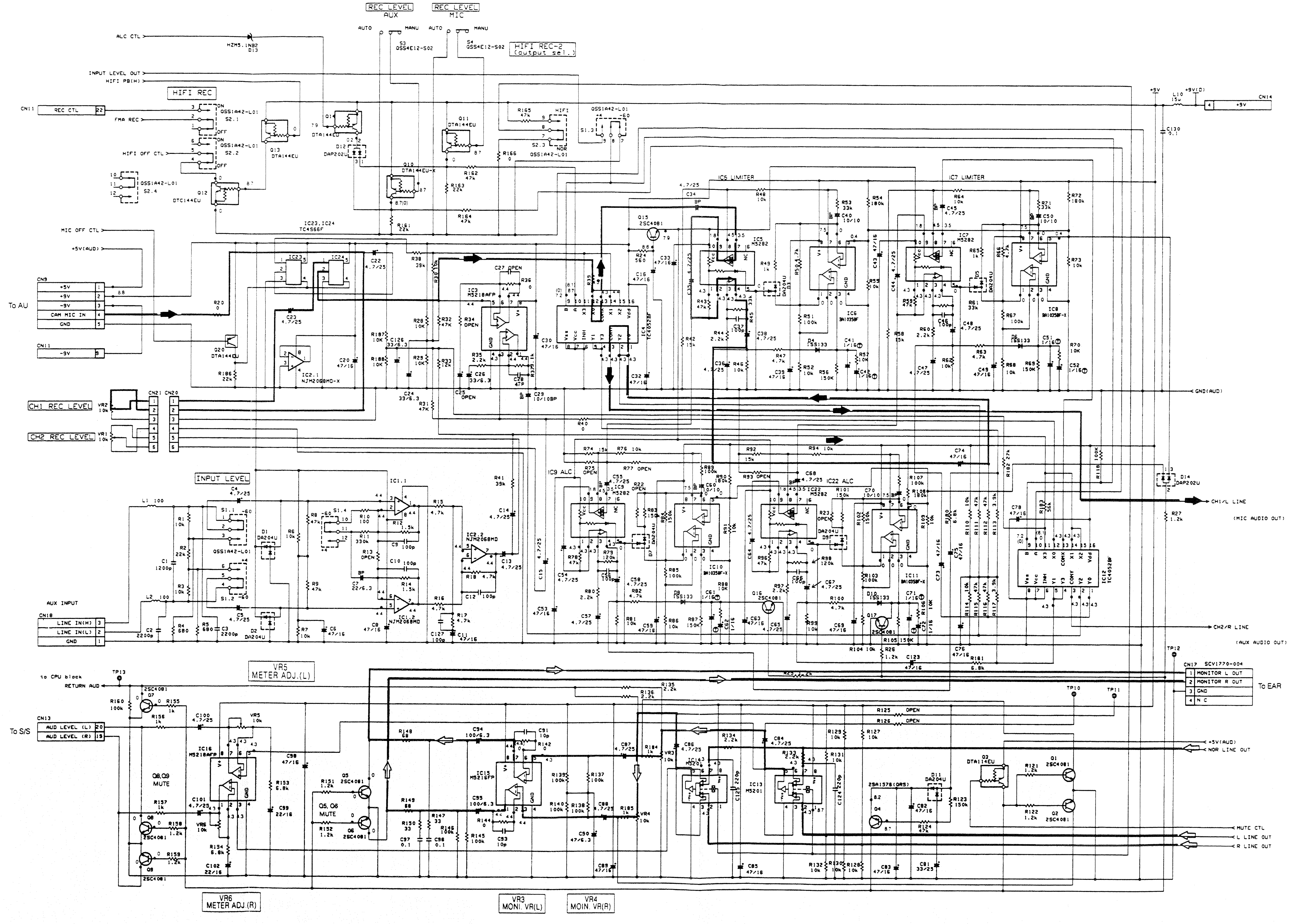
– Side B –


C5
C11
C9
C8
C1
SC82453
-05-001

– M JUNC –


SC82456-03-002
CN1
CN2
CN4
20
19
2
1

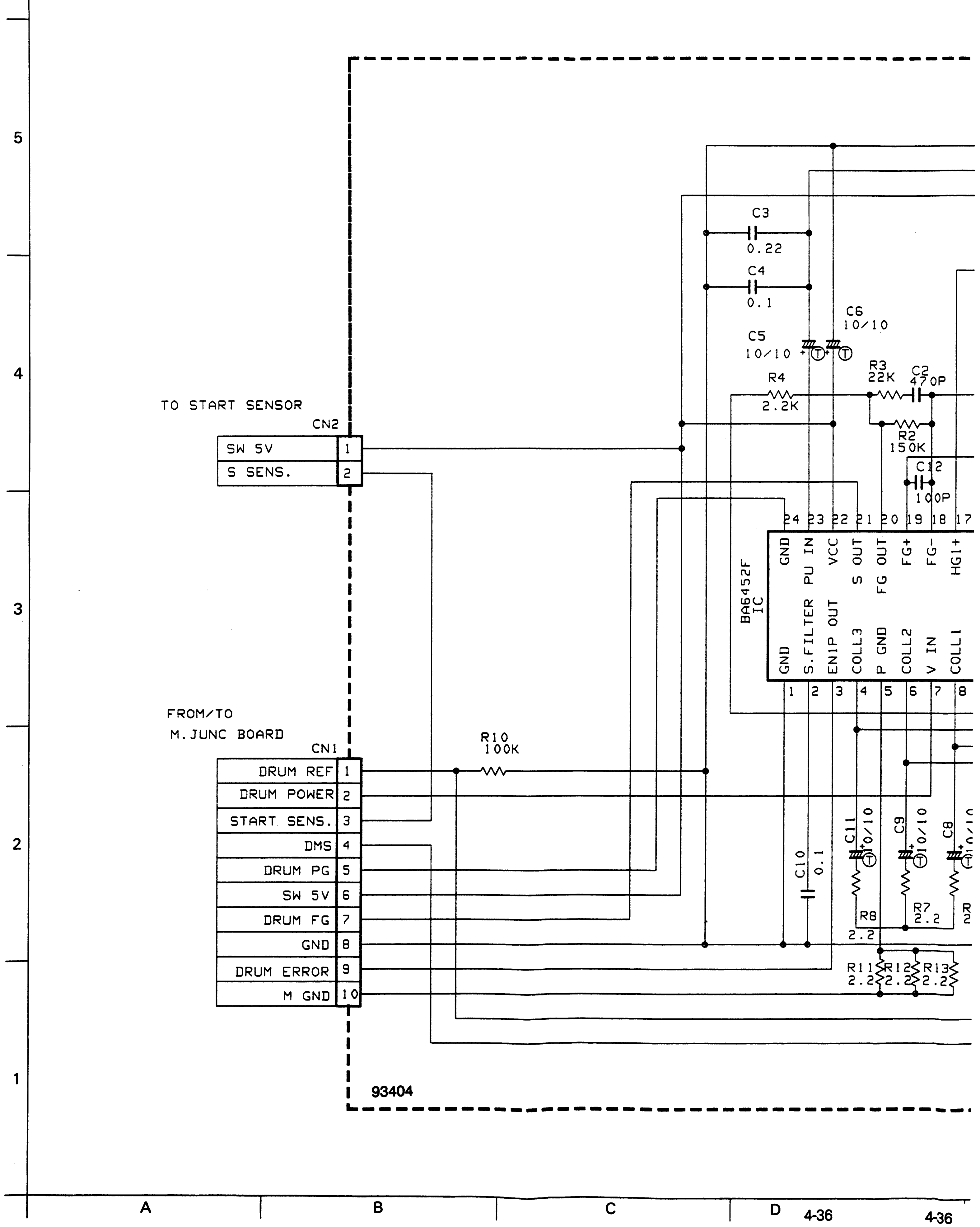
4.36 AUCP BOARD SCHEMATIC DIAGRAM (AUDIO SECTION)– (1/4) 1 6


REC LEVEL AUX
REC LEVEL MIC
AUTO
MANU
S3 QSS4E12-S02
S4 QSS4E12-S02
HIFI REC-2 (output sel.)
ALC CTL
HZM5.1NB2 D13
INPUT LEVEL OUT
HIFI PB(H)
HIFI REC
CN11
REC CTL
FMA REC
HIFI OFF CTL
QSS1A42-L01
S2.1
S2.2
S2.4
ON
OFF
Q11 DTA144EU
Q12 DTC144EU
Q13 DTA144EU
Q10 DTA144EU-X
D12 DAP202U
R165 47k
HIFI
NOR
S1.3
R166 0
R161 22k
R162 47k
R163 22k
R164 47k
+5V
+9V(D)
L10 15μ
CN14
C130 0.1
MIC OFF CTL
+5V(AUD)
IC23,IC24 TC4S66F
CN9
To AU
-9V
CAM MIC IN
GND
Q20 DTA144EU
IC2.1 NJM2068MD-X
IC3 M5218AFP
IC4 TC4052BF
Q15 2SC4081
IC5 LIMITER
IC5 M5282
IC6 BA10358F-X
IC7 LIMITER
IC7 M5282
IC8 BA10358F-X
GND(AUD)
CN21
CN20
CH1 REC LEVEL
CH2 REC LEVEL
VR2 10k
VR1 10k
INPUT LEVEL
IC1.1
IC1.2 NJM2068MD
IC2.2 NJM2068MD
S1.1
S1.2
S1.4
D1 DA204U
D2 DA204U
L1 100
L2 100
AUX INPUT
CN18
LINE IN(R)
LINE IN(L)
IC9 ALC
IC9 M5282
IC10 BA10358F-X
IC22 ALC
IC22 M5282
IC11 BA10358F-X
IC12 TC4052BF
Q16 2SC4081
Q17 2SC4081
D14 DAP202U
CH1/L LINE
(MIC AUDIO OUT)
CH2/R LINE
(AUX AUDIO OUT)
TP12
CN17 SCV1770-004
MONITOR L OUT
MONITOR R OUT
GND
N C
To EAR
TP10
TP11
TP13
to CPU block
RETURN AUD
CN13
To S/S
AUD LEVEL (L)
AUD LEVEL (R)
VR5 METER ADJ.(L)
VR6 METER ADJ.(R)
Q7 2SC4081
Q8,Q9 MUTE
Q8 2SC4081
Q9 2SC4081
IC16 M5218AFP
Q5, Q6 MUTE
Q5 2SC4081
Q6 2SC4081
IC15 M5218FP
VR3 MONI. VR(L)
VR4 MOIN. VR(R)
IC13 M5201
Q4 2SA1576(QRS)
D11 DA204U
Q3 DTA114EU
Q1 2SC4081
Q2 2SC4081
+5V(AUD)
NOR LINE OUT
MUTE CTL
L LINE OUT
R LINE OUT
R125 OPEN
R126 OPEN

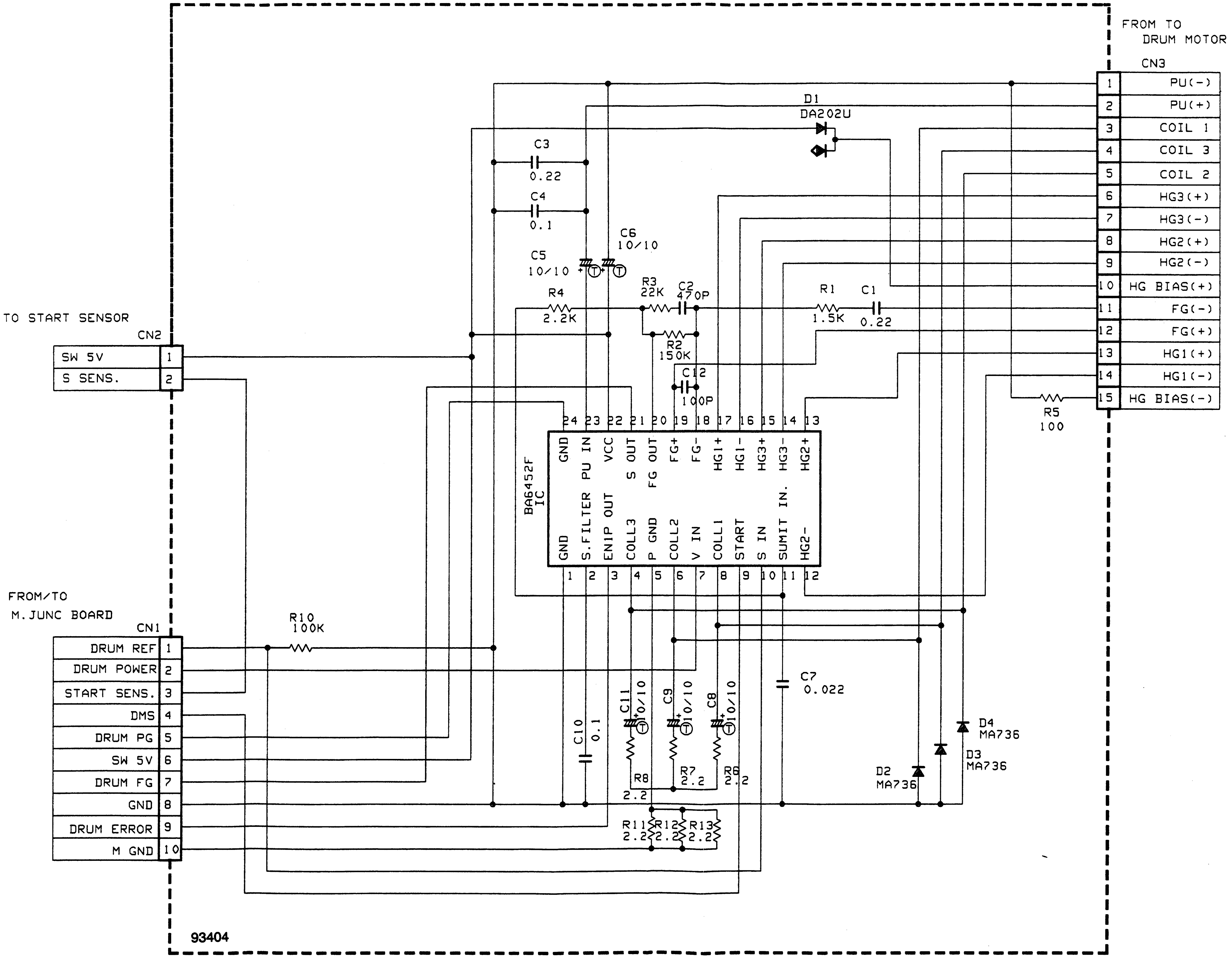
91133

Revised in Feb. 1996.

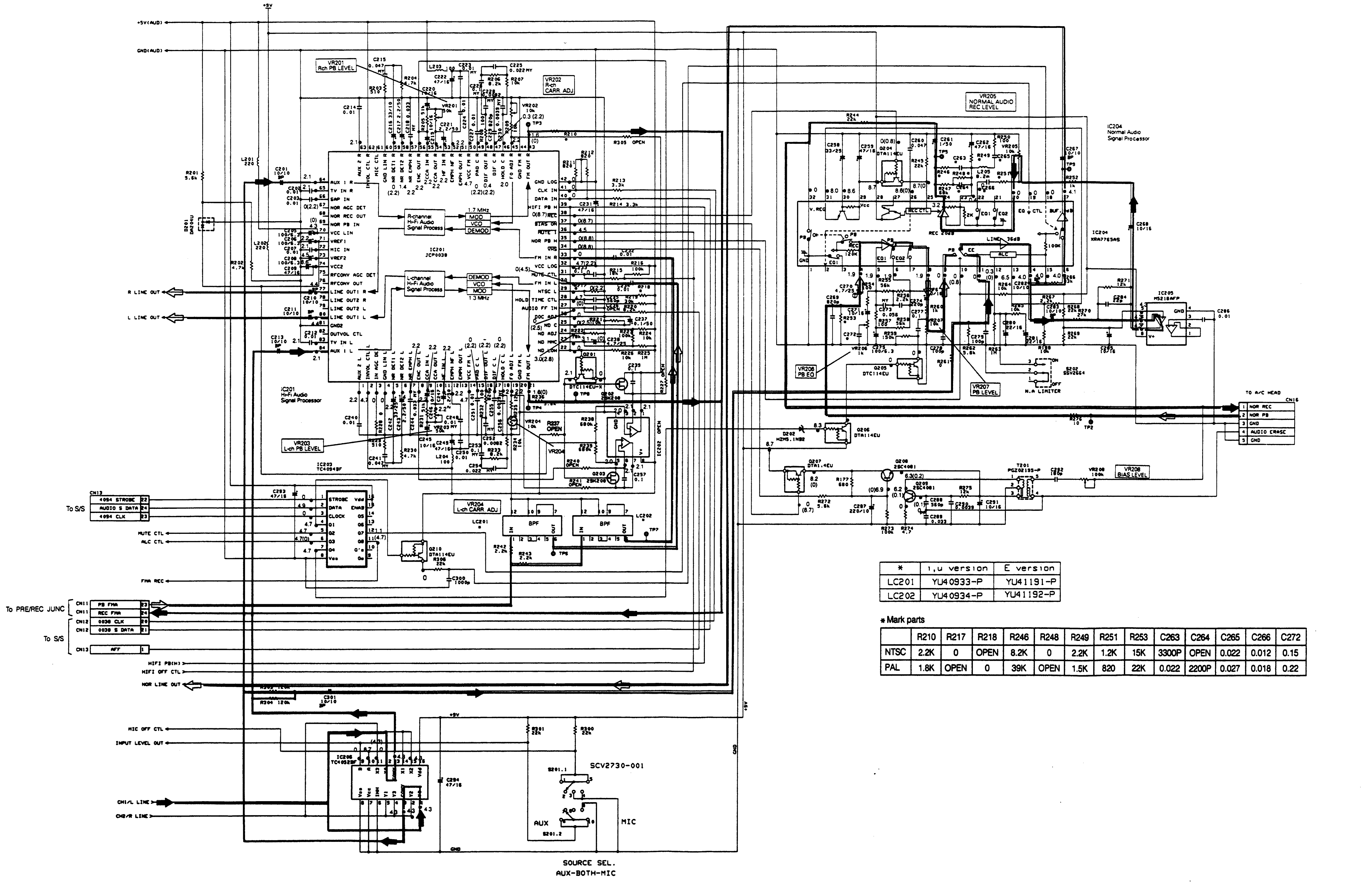
4.34 MDA BOARD SCHEMATIC DIAGRAM 1 4


6
5
4
3
2
1
A
B
C
D
TO START SENSOR
CN2
SW 5V 1
S SENS. 2
FROM/TO
M.JUNC BOARD
CN1
DRUM REF 1
DRUM POWER 2
START SENS. 3
DMS 4
DRUM PG 5
SW 5V 6
DRUM FG 7
GND 8
DRUM ERROR 9
M GND 10
R10
100K
C3
0.22
C4
0.1
C5
10/10
C6
10/10
R4
2.2K
R3
22K
C2
470P
R2
150K
C12
100P
BA6452F
IC
GND
PU IN
VCC
S OUT
FG OUT
FG+
FG-
HG1+
GND
S.FILTER
EN1P OUT
COLL3
P GND
COLL2
V IN
COLL1
24 23 22 21 20 19 18 17
1 2 3 4 5 6 7 8
C10
0.1
C11
10/10
C9
10/10
C8
R8
2.2
R7
2.2
R11
2.2
R12
2.2
R13
2.2
93404

4.34 MDA BOARD SCHEMATIC DIAGRAM 1 4


FROM TO
DRUM MOTOR
CN3
1 PU(-)
2 PU(+)
3 COIL 1
4 COIL 3
5 COIL 2
6 HG3(+)
7 HG3(-)
8 HG2(+)
9 HG2(-)
10 HG BIAS(+)
11 FG(-)
12 FG(+)
13 HG1(+)
14 HG1(-)
15 HG BIAS(-)
D1
DA202U
C3
0.22
C4
0.1
C5
10/10
C6
10/10
R4
2.2K
R3
22K
C2
470P
R2
150K
C12
100P
R1
1.5K
C1
0.22
R5
100
BA6452F
IC
GND
PU IN
VCC
S OUT
FG OUT
FG+
FG-
HG1+
HG1-
HG3+
HG3-
HG2+
GND
S.FILTER
ENIP OUT
COLL3
P GND
COLL2
V IN
COLL1
START
S IN
SUMIT IN.
HG2-
TO START SENSOR
CN2
SW 5V 1
S SENS. 2
FROM/TO
M.JUNC BOARD
CN1
DRUM REF 1
DRUM POWER 2
START SENS. 3
DMS 4
DRUM PG 5
SW 5V 6
DRUM FG 7
GND 8
DRUM ERROR 9
M GND 10
R10
100K
C10
0.1
C11
10/10
C9
10/10
C8
10/10
R8
2.2
R7
2.2
R6
2.2
R11
2.2
R12
2.2
R13
2.2
C7
0.022
D4
MA736
D3
MA736
D2
MA736
93404

- AUCP BOARD SCHEMATIC DIAGRAM (AUDIO SECTION)- (2/4) 1 6



+5V(AUD)
GND(AUD)
+9V
VR201
Rch PB LEVEL
VR202
R-ch
CARR ADJ
VR203
L-ch PB LEVEL
VR204
L-ch CARR ADJ
R-channel
Hi-Fi Audio
Signal Process
L-channel
Hi-Fi Audio
Signal Process
MOD
VCO
DEMOD
1.7 MHz
1.3 MHz
IC201
JCP0038
IC201
Hi-Fi Audio
Signal Processor
R LINE OUT
L LINE OUT
IC203
TC4094BF
CN13
4094 STROBE
AUDIO S DATA
4094 CLK
To S/S
MUTE CTL
ALC CTL
FMA REC
To PRE/REC JUNC
CN11
PB FMA
REC FMA
CN12
0038 CLK
0038 S DATA
CN13
AFF
HIFI PB(H)
HIFI OFF CTL
NOR LINE OUT
MIC OFF CTL
INPUT LEVEL OUT
CH1/L LINE
CH2/R LINE
IC206
TC4052BF
LC201
LC202
BPF
TP7
SCV2730-001
S201.1
S201.2
AUX
MIC
SOURCE SEL.
AUX-BOTH-MIC
VR205
NORMAL AUDIO
REC LEVEL
IC204
Normal Audio
Signal Processor
IC204
XRA7765AS
REC 20dB
LINE 36dB
ALC
EQ CTL
BUF.
PB
EC
IC205
M5218AFP
VR206
PB EQ
VR207
PB LEVEL
S202
SSV2664
N.A LIMITER
ON
OFF
TO A/C HEAD
CN16
NOR REC
NOR PB
GND
AUDIO ERASE
GND
TP2
T201
PGZ02155-P
VR208
BIAS LEVEL

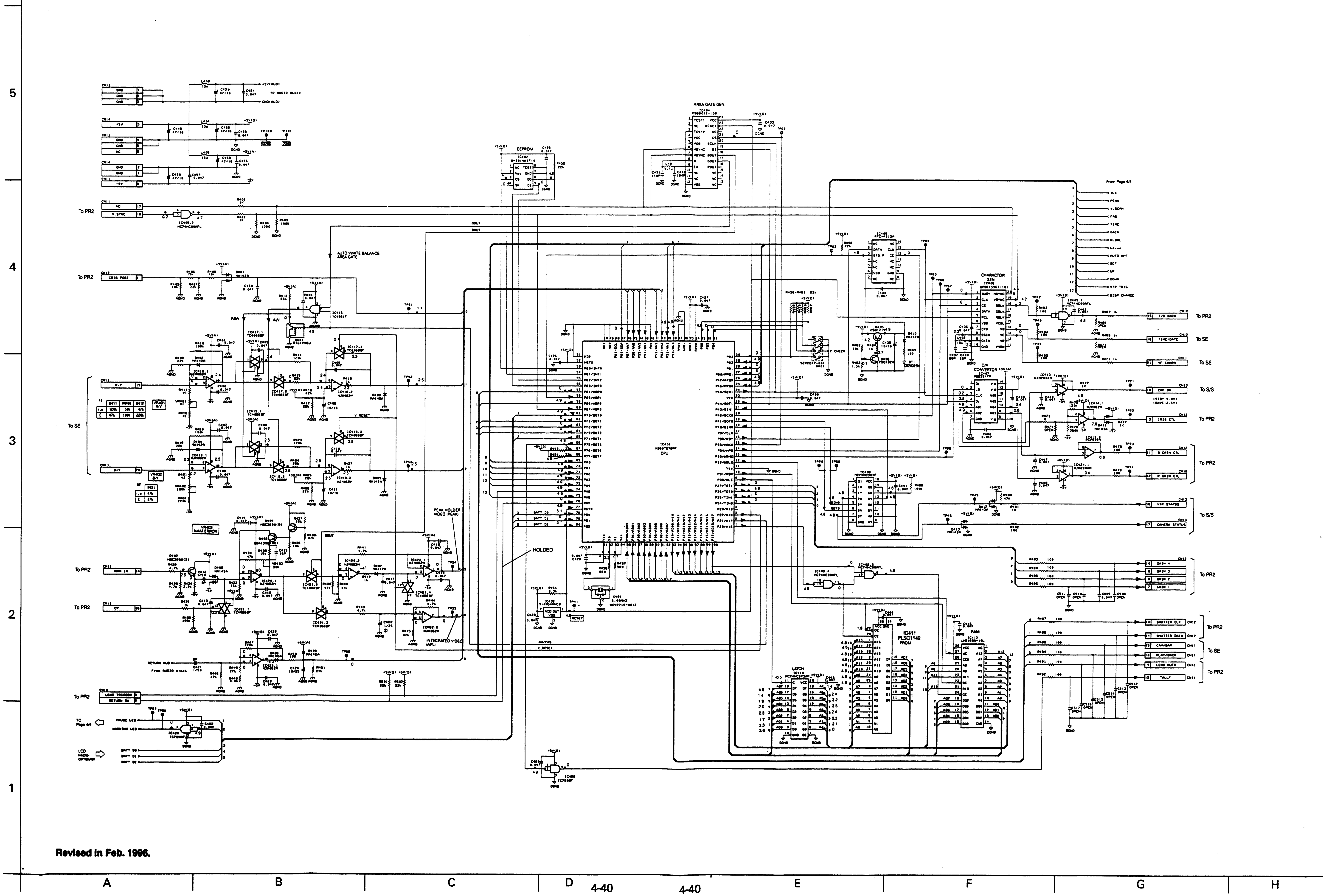
*	ı,u version	E version
LC201	YU40933-P	YU41191-P
LC202	YU40934-P	YU41192-P

* Mark parts

	R210	R217	R218	R246	R248	R249	R251	R253	C263	C264	C265	C266	C272
NTSC	2.2K	0	OPEN	8.2K	0	2.2K	1.2K	15K	3300P	OPEN	0.022	0.012	0.15
PAL	1.8K	OPEN	0	39K	OPEN	1.5K	820	22K	0.022	2200P	0.027	0.018	0.22

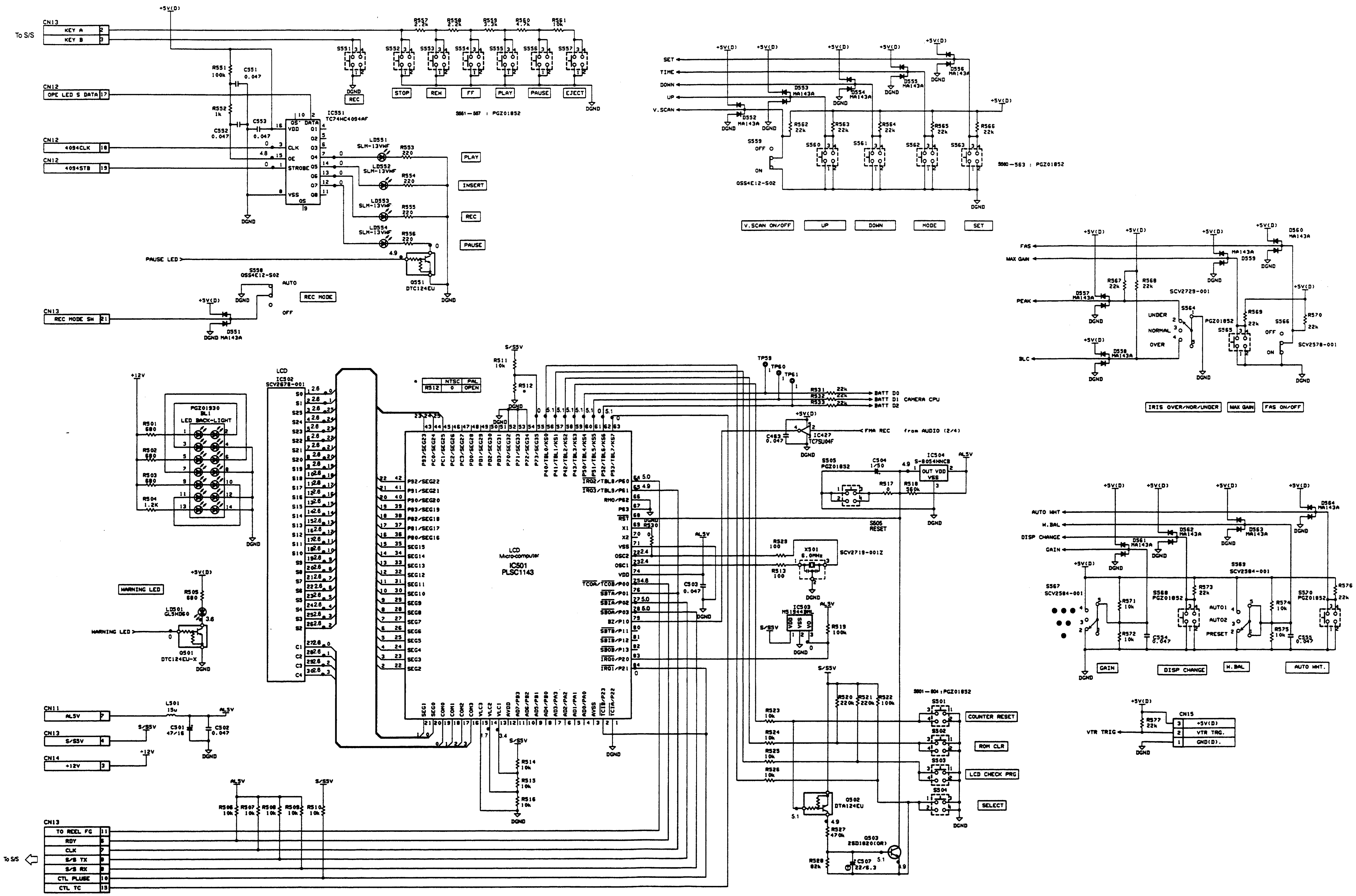
Revised in Feb. 1996.

– AUCP BOARD SCHEMATIC DIAGRAM (CPU SECTION)– (3/4) 16

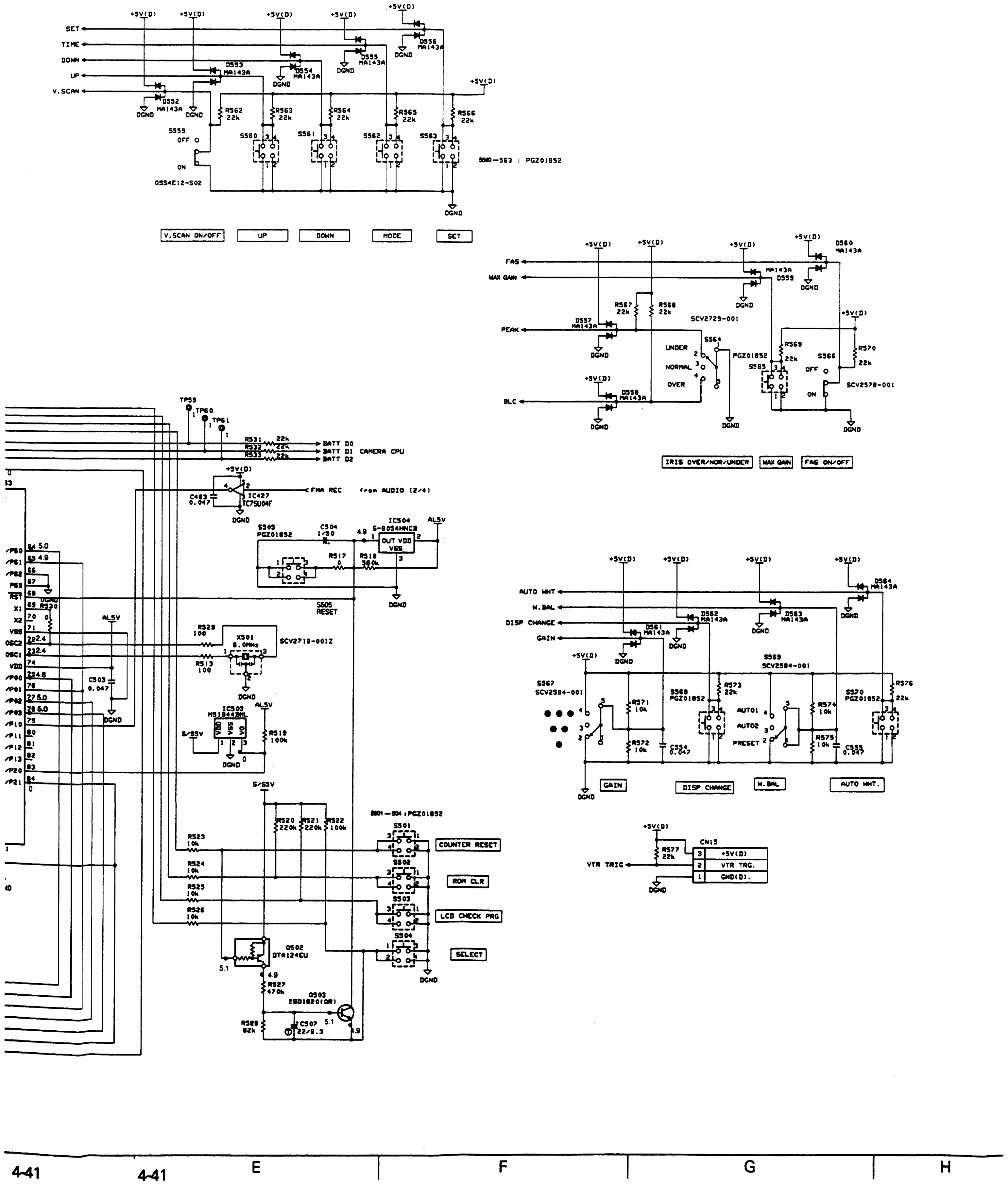

6
5
4
3
2
1
A
B
C
D
E
F
G
H
TO AUDIO BLOCK
To PR2
HD
V.SYNC
IRIS POS1
AUTO WHITE BALANCE AREA GATE
To SE
R-Y
B-Y
VR401 R-Y
VR402 B-Y
VR403 NAM ERROR
NAM IN
CP
RETURN AUD From AUDIO block
LENS TRIGGER
RETURN SW
TO Page 4/4
PAUSE LED
WARNING LED
LCD Micro-computer
BATT D0
BATT D1
BATT D2
PEAK HOLDER VIDEO (PEAK)
INTEGRATED VIDEO (APL)
HOLDED
EEPROM
AREA GATE GEN
IC401 CPU
CHARACTOR GEN
D/A CONVERTOR
LATCH
IC411 PLSC1142 PROM
RAM
From Page 4/4
BLC
PEAK
V.SCAN
FAS
TIME
GAIN
W.BAL
AUTO WHT
SET
UP
DOWN
VTR TRIG
DISP CHANGE
T/S BACK
TIME/DATE
VF CHARA
CAM ON
IRIS CTL
B GAIN CTL
R GAIN CTL
VTR STATUS
CAMERA STATUS
GAIN 4
GAIN 3
GAIN 2
GAIN 1
SHUTTER CLK
SHUTTER DATA
PLAY/BACK
LENS AUTO
TALLY
To S/S

Revised in Feb. 1996.

– AUCP BOARD SCHEMATIC DIAGRAM (LCD SECTION)– (4/4) 1 6


To S/S
CN13
KEY A
KEY B
CN12
OPE LED S DATA
4094CLK
4094STB
+5V(D)
R551 100k
C551 0.047
R552 1k
C552 0.047
C553
IC551 TC74HC4094AF
VDD
CLK
OE
STROBE
VSS
DATA
DGND
LD551 SLM-13VHF
LD552 SLM-13VHF
LD553 SLM-13VHF
LD554 SLM-13VHF
R553 220
R554 220
R555 220
R556 220
PLAY
INSERT
REC
PAUSE
PAUSE LED
Q551 DTC124EU
S558 OSS4E12-S02
AUTO
OFF
REC MODE
REC MODE SW
D551 MA143A
R557 2.2k
R558 2.2k
R559 3.3k
R560 4.7k
R561 10k
S551
S552
S553
S554
S555
S556
S557
STOP
REW
FF
PLAY
PAUSE
EJECT
S551 – 557 : PGZ01852
SET
TIME
DOWN
UP
V.SCAN
D552 MA143A
D553 MA143A
D554 MA143A
D555 MA143A
D556 MA143A
R562 22k
R563 22k
R564 22k
R565 22k
R566 22k
S559
OFF
ON
OSS4E12-S02
S560
S561
S562
S563
S560 – 563 : PGZ01852
V.SCAN ON/OFF
UP
DOWN
MODE
SET
FAS
MAX GAIN
PEAK
BLC
D557 MA143A
D558 MA143A
D559
D560 MA143A
R567 22k
R568 22k
R569 22k
R570 22k
SCV2729-001
S564
UNDER
NORMAL
OVER
PGZ01852
S565
S566
SCV2578-001
IRIS OVER/NOR/UNDER
MAX GAIN
FAS ON/OFF
+12V
R501 680
R502 680
R503 680
R504 1.2K
PGZ01930
BL1
LED BACK-LIGHT
LCD
IC502
SCV2678-001
NTSC
PAL
R512
OPEN
S/S5V
R511 10k
WARNING LED
R505 680
LD501 GL5HD60
Q501 DTC124EU-X
LCD Micro-computer
IC501
PLSC1143
TP59
TP60
TP61
R531 22k
R532 22k
R533 22k
BATT D0
BATT D1
BATT D2
CAMERA CPU
C483 0.047
IC427 TC7SU04F
FMA REC
from AUDIO (2/4)
S505 PGZ01852
C504 1/50
IC504 S-8054HNCB
R517
R518 560k
S505 RESET
AL5V
R529 100
R513 100
X501 6.0MHz
SCV2718-001Z
C503 0.047
IC503 M51944BML
R519 100k
CN11
AL5V
L501 15u
C501 47/16
C502 0.047
CN13
S/S5V
CN14
+12V
R506 10k
R507 10k
R508 10k
R509 10k
R510 10k
TO REEL FG
RDY
CLK
S/S TX
S/S RX
CTL PLUSE
CTL TC
R514 10k
R515 10k
R516 10k
R520 220k
R521 220k
R522 100k
S501 – 504 : PGZ01852
R523 10k
R524 10k
R525 10k
R526 10k
S501
S502
S503
S504
COUNTER RESET
ROM CLR
LCD CHECK PRG
SELECT
Q502 DTA124EU
R527 470k
Q503 2SD1820(QR)
R528 82k
C507 22/6.3
AUTO WHT
W.BAL
DISP CHANGE
GAIN
D561 MA143A
D562 MA143A
D563 MA143A
D564 MA143A
S567 SCV2584-001
S568 PGZ01852
S569 SCV2584-001
S570 PGZ01852
R571 10k
R572 10k
R573 22k
R574 10k
R575 10k
R576 22k
C554 0.047
C555 0.047
AUTO1
AUTO2
PRESET
GAIN
DISP CHANGE
W.BAL
AUTO WHT.
R577 22k
CN15
+5V(D)
VTR TRG.
GND(D).
VTR TRIG
DGND

Revised in Feb. 1996.


SET
TIME
DOWN
UP
V.SCAN
+5V(D)
D552 MA143A
D553 MA143A
D554 MA143A
D555 MA143A
D556 MA143A
DGND
R562 22k
R563 22k
R564 22k
R565 22k
R566 22k
S559
OFF
ON
OSS4E12-S02
S560
S561
S562
S563
S560—563 : PGZ01852
V.SCAN ON/OFF
UP
DOWN
MODE
SET
FAS
MAX GAIN
PEAK
BLC
D557 MA143A
D558 MA143A
D559 MA143A
D560 MA143A
R567 22k
R568 22k
SCV2729-001
S564
UNDER
NORMAL
OVER
PGZ01852
S565
R569 22k
S566
R570 22k
SCV2578-001
IRIS OVER/NOR/UNDER
MAX GAIN
FAS ON/OFF
TP59
TP60
TP61
R531 22k
R532 22k
R533 22k
BATT D0
BATT D1
BATT D2
CAMERA CPU
IC427 TC7SU04F
C483 0.047
FMA REC
from AUDIO (2/4)
S505 PGZ01852
C504 1/50
R517 0
R518 560k
IC504 S-8054HNCB
OUT VDD VSS
AL5V
S505 RESET
P60
P61
P62
P63
RST
X1
X2
VSS
OSC2
OSC1
VDD
P00
P01
P02
P03
P10
P11
P12
P13
P20
P21
R529 100
R513 100
X501 6.0MHz
SCV2719-001Z
R530 0
C503 0.047
IC503 MS1944BML
S/S5V
R519 100k
R520 220k
R521 220k
R522 100k
R523 10k
R524 10k
R525 10k
R526 10k
S501—504 : PGZ01852
S501
S502
S503
S504
COUNTER RESET
ROM CLR
LCD CHECK PRG
SELECT
Q502 DTA124EU
R527 470k
Q503 2SD1820(QR)
R528 82k
C507 22/6.3
AUTO WHT
W.BAL
DISP CHANGE
GAIN
D561 MA143A
D562 MA143A
D563 MA143A
D564 MA143A
S567 SCV2584-001
R571 10k
R572 10k
C554 0.047
S568 PGZ01852
R573 22k
S569 SCV2584-001
AUTO1
AUTO2
PRESET
R574 10k
R575 10k
C555 0.047
S570 PGZ01852
R576 22k
GAIN
DISP CHANGE
W.BAL
AUTO WHT.
R577 22k
CN15
VTR TRIG
+5V(D)
VTR TRG.
GND(D).
4-41
4-41
E
F
G
H

● ADDRESS TABLE OF BOARD PARTS

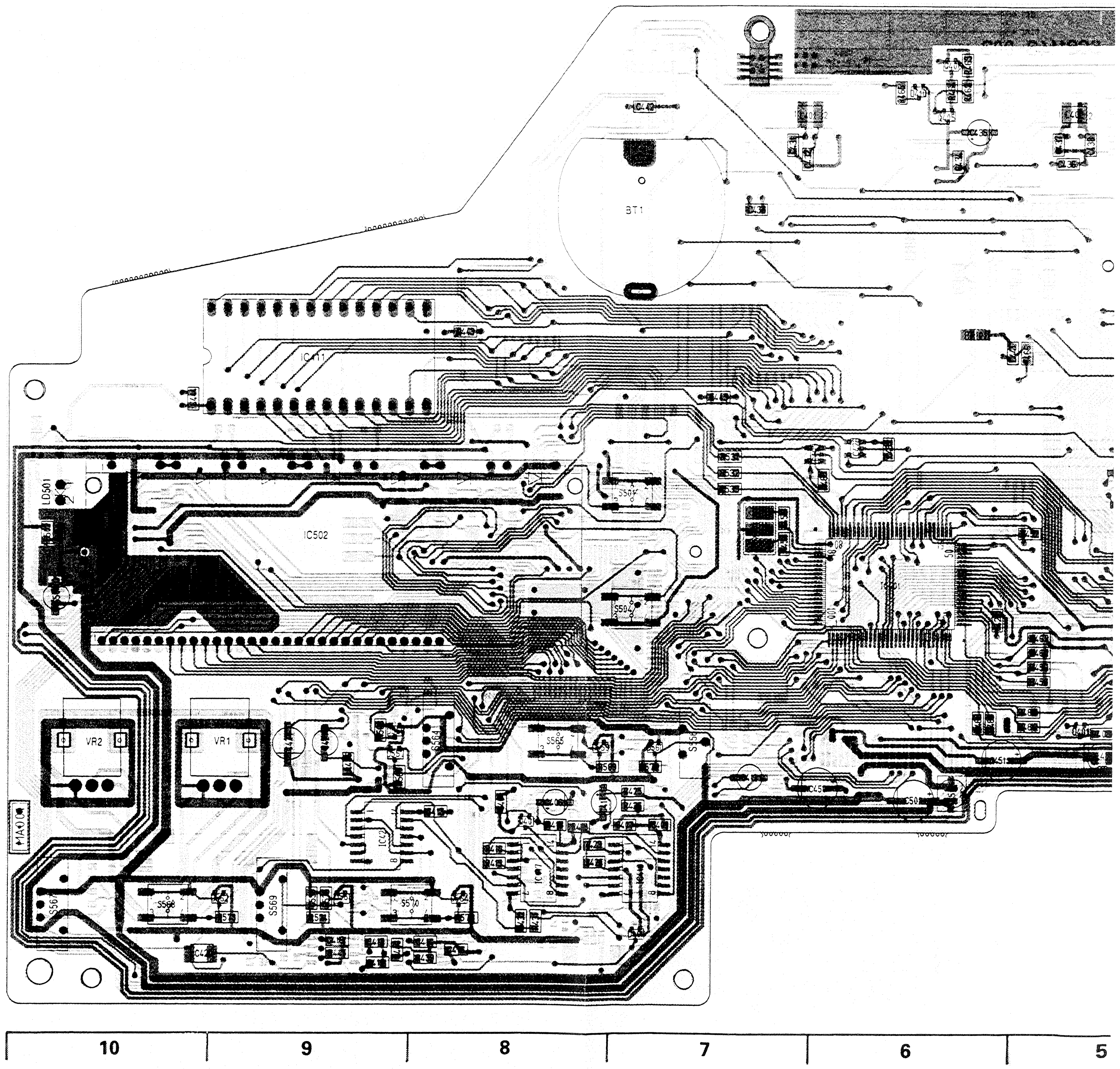
Each address may have an address error by one interval.

A-1C
Side ┘ | └ Y axis
└ X axis

IC1	B- 1D	Q20	B- 3E	R10	B- 1D	R87	B- 4E	R177	B- 1D	R265	B- 2E	R458	A- 5B	R554	A- 2C
IC2	B- 1D	Q201	A- 5D	R11	B- 1D	R88	B- 4E	R180	B- 3E	R266	B- 2E	R459	A- 5B	R555	A- 2C
IC3	B- 2E	Q202	B- 4E	R12	B- 1D	R89	A- 4E	R181	A- 2D	R267	B- 1E	R460	A- 5B	R556	A- 2C
IC4	B- 3E	Q203	B- 5D	R13	B- 1D	R90	B- 4E	R182	B- 2D	R268	B- 2D	R461	A- 5B	R557	A- 3C
IC5	B- 3E	Q204	B- 1D	R14	B- 1D	R91	B- 4E	R183	B- 2D	R269	B- 2D	R462	A- 6E	R558	A- 3C
IC6	B- 4E	Q205	A- 1E	R15	B- 1D	R92	B- 3D	R184	B- 2C	R270	B- 2D	R463	A- 6E	R559	A- 2C
IC7	B- 3D	Q206	A- 1E	R16	B- 1D	R93	B- 4D	R185	B- 2C	R271	B- 2D	R464	A- 6E	R560	A- 2C
IC8	B- 3D	Q207	B- 1D	R17	B- 1D	R94	B- 4D	R186	B- 3E	R272	B- 1D	R465	A- 6E	R561	A- 2C
IC9	B- 4E	Q208	B- 1D	R18	B- 1D	R96	B- 4D	R187	B- 2E	R273	B- 1D	R466	A- 5D	R562	A- 4B
IC10	B- 4E	Q209	A- 1E	R20	B- 2E	R97	B- 4E	R188	B- 2E	R274	A- 1D	R467	B- 3B	R563	A- 3B
IC11	B- 4D	Q210	A- 2B	R22	B- 4E	R98	B- 4E	R199	B- 1E	R275	A- 1E	R468	B- 3B	R564	A- 3B
IC12	B- 2D	Q401	A- 8A	R23	B- 4D	R99	B- 3D	R201	B- 4C	R276	A- 1E	R469	B- 3B	R565	A- 2B
IC13	B- 3D	Q402	B- 7B	R24	B- 3E	R100	A- 3D	R202	B- 4C	R300	B- 1C	R470	B- 3B	R566	A- 2B
IC14	B- 3D	Q403	B- 9A	R25	B- 4E	R101	B- 4D	R203	B- 3C	R301	B- 1C	R471	B- 7B	R567	A- 9B
IC15	B- 2D	Q404	B- 9A	R26	B- 5E	R102	B- 4D	R204	B- 4C	R303	A- 3C	R472	A- 2B	R568	A- 9B
IC16	B- 1C	Q405	A- 6E	R27	B- 4E	R103	B- 4D	R205	B- 4C	R304	A- 3C	R473	A- 3B	R569	A- 8B
IC22	B- 4D	Q406	A- 6E	R28	B- 2E	R104	B- 4D	R206	B- 3D	R305	B- 5D	R474	A- 2B	R570	A- 7B
IC23	B- 3E	Q501	B- 10C	R29	B- 2E	R105	B- 4E	R207	B- 4D	R306	A- 2B	R475	A- 2B	R571	B- 10A
IC24	A- 3E	Q502	B- 8C	R30	B- 2E	R106	B- 4E	R208	B- 4C	R401	B- 6B	R476	A- 2B	R572	B- 10A
IC201	B- 4C	Q503	B- 8C	R31	B- 2E	R107	B- 4D	R209	B- 4D	R402	B- 7E	R477	A- 2B	R573	A- 9A
IC202	B- 5D	Q551	A- 2C	R32	B- 2E	R108	B- 4D	R210	B- 4D	R403	B- 6B	R478	A- 2B	R574	A- 9A
IC203	B- 2B			R33	B- 2D	R109	B- 4D	R211	B- 4D	R404	B- 7E	R479	A- 3B	R575	A- 9A
IC204	A- 1E	D1	B- 1D	R34	B- 2D	R110	B- 2D	R212	B- 4D	R405	A- 5B	R480	A- 5D	R576	A- 8A
IC205	B- 2D	D2	B- 1D	R35	B- 3E	R111	B- 3E	R213	B- 4D	R406	A- 5B	R481	A- 5D	R577	B- 8A
IC206	B- 1C	D3	B- 4E	R36	B- 2E	R112	B- 3E	R214	B- 4D	R407	A- 5B	R482	A- 5D	R601	B- 3B
IC401	A- 6C	D4	A- 4E	R37	B- 3E	R113	B- 3E	R215	A- 4D	R408	A- 5B	R483	A- 5B	R602	B- 3B
IC402	B- 6C	D5	B- 3D	R38	B- 3E	R114	B- 3E	R216	A- 4D	R409	B- 8A	R484	A- 5B		
IC403	B- 6C	D6	A- 3D	R39	B- 2D	R115	B- 2D	R217	A- 4D	R410	B- 8A	R485	A- 6B	VR1	A- 9B
IC404	B- 7E	D7	B- 4E	R40	B- 2E	R116	B- 2D	R218	A- 4D	R411	B- 8A	R486	A- 6B	VR2	A- 10B
IC405	B- 6E	D8	A- 4E	R41	A- 2D	R117	B- 2D	R219	A- 4D	R412	B- 8A	R487	B- 3B	VR3	B- 2C
IC406	B- 6E	D9	B- 4D	R42	B- 3E	R118	B- 3E	R220	A- 4D	R413	A- 8A	R488	B- 3B	VR4	B- 2C
IC407	B- 5B	D10	A- 4D	R43	B- 3E	R121	B- 3C	R221	A- 4D	R414	A- 8A	R489	B- 7B	VR5	B- 1D
IC408	B- 6D	D11	B- 3D	R44	B- 3E	R122	B- 3C	R222	B- 4D	R415	A- 8A	R490	B- 7B	VR6	B- 1C
IC409	B- 7E	D12	A- 1B	R45	B- 3E	R123	B- 3D	R223	B- 4D	R416	A- 8A	R491	A- 3B	VR201	B- 3C
IC410	B- 8D	D13	A- 2B	R46	B- 3E	R124	B- 3D	R224	B- 4D	R417	B- 8B	R492	B- 7B	VR202	B- 4D
IC411	A- 10D	D14	B- 4E	R47	B- 3E	R125	A- 3C	R225	B- 4D	R418	B- 8A	R493	B- 5E	VR203	B- 5C
IC412	B- 7D	D201	B- 4C	R48	B- 3E	R126	A- 3D	R226	B- 4D	R419	B- 7A	R494	B- 2C	VR204	B- 5D
IC413	A- 2B	D202	A- 2E	R49	B- 4E	R127	B- 3D	R227	B- 5E	R420	B- 7A	R495	B- 7B	VR205	B- 2D
IC414	A- 3B	D401	A- 5B	R50	B- 4E	R128	B- 3D	R228	B- 5C	R421	B- 7A	R496	B- 6E	VR206	B- 2E
IC415	B- 8B	D402	B- 8A	R51	B- 4E	R129	B- 3C	R229	B- 5C	R422	B- 8A	R501	B- 10C	VR207	B- 2E
IC416	B- 8A	D403	B- 8A	R52	B- 4E	R130	B- 3C	R230	B- 5C	R423	A- 8A	R502	B- 9C	VR208	B- 1E
IC417	A- 8A	D404	B- 7A	R53	B- 3E	R131	B- 3D	R231	B- 5C	R424	A- 8A	R503	B- 9C	VR401	B- 8A
IC418	B- 7A	D405	B- 7B	R54	B- 3E	R132	B- 3D	R232	B- 5C	R425	A- 7B	R504	B- 8C	VR402	B- 8A
IC419	A- 7A	D406	A- 7A	R55	B- 3E	R133	B- 3C	R233	A- 5D	R426	A- 7B	R505	B- 10C	VR403	B- 8A
IC420	B- 8A	D407	B- 9A	R56	B- 3E	R134	B- 3C	R234	A- 5D	R427	B- 7A	R506	B- 10C		
IC421	A- 9A	D408	B- 9B	R57	B- 3E	R135	B- 2C	R235	B- 5D	R428	B- 7B	R507	B- 10C	C1	B- 1B
IC422	B- 9A	D409	B- 9B	R58	B- 3D	R136	B- 2C	R236	B- 4D	R429	B- 7B	R508	B- 10C	C2	A- 1B
IC423	B- 9B	D410	A- 6E	R59	B- 3D	R137	B- 2D	R237	B- 5D	R430	B- 7B	R509	B- 10C	C3	A- 1B
IC424	A- 3B	D411	A- 2B	R60	B- 3D	R138	B- 2C	R238	B- 4D	R431	A- 8A	R510	B- 7C	C4	A- 1D
IC425	B- 7B	D412	A- 5D	R61	B- 3D	R139	B- 2C	R239	B- 4D	R432	A- 8A	R511	B- 10C	C5	A- 1D
IC426	A- 6C	D413	A- 5D	R62	B- 3D	R140	B- 2D	R240	B- 5D	R433	B- 8A	R512	B- 10C	C6	A- 1D
IC427	A- 6C	D551	A- 2C	R63	B- 3D	R142	B- 2D	R241	B- 5D	R434	B- 8A	R513	B- 7C	C7	A- 1D
IC501	B- 8B	D552	A- 4B	R64	B- 3D	R144	B- 2C	R242	A- 5D	R435	B- 9A	R514	B- 7C	C8	A- 1D
IC502	A- 9C	D553	A- 3B	R65	B- 3D	R145	B- 1D	R243	A- 5D	R436	B- 9A	R515	B- 7C	C9	B- 1D
IC503	B- 9C	D554	A- 3B	R66	B- 3D	R146	B- 1C	R244	B- 1D	R437	B- 9A	R516	B- 7C	C10	B- 1D
IC504	B- 10C	D555	A- 2B	R67	B- 3D	R147	B- 2D	R245	B- 1D	R438	B- 9A	R517	B- 10C	C11	A- 1D
IC551	B- 2C	D556	A- 2B	R68	B- 3D	R148	B- 2D	R246	B- 1E	R439	A- 8A	R518	B- 10C	C12	B- 1D
		D557	A- 9B	R69	B- 3D	R149	A- 1C	R247	B- 1E	R440	A- 9A	R519	B- 9C	C13	A- 2D
Q1	B- 3C	D558	A- 9B	R70	B- 3D	R150	B- 1C	R248	B- 1E	R441	B- 9A	R520	B- 8C	C14	A- 2D
Q2	B- 3C	D559	A- 8B	R71	B- 3D	R151	B- 1D	R249	B- 1D	R442	B- 9A	R521	B- 8C	C15	A- 2E
Q3	B- 3C	D560	A- 7B	R72	B- 3D	R152	B- 1C	R250	B- 1D	R443	B- 9A	R522	B- 8C	C16	A- 4E
Q4	B- 3D	D561	B- 10A	R73	B- 3D	R153	B- 1D	R251	B- 2D	R444	B- 9A	R523	B- 8C	C20	A- 1D
Q5	B- 1D	D562	A- 9A	R74	B- 4E	R154	B- 1C	R252	B- 2D	R445	A- 9A	R524	B- 8C	C22	A- 3E
Q6	B- 1C	D563	A- 9A	R75	A- 4E	R155	B- 1C	R253	A- 1E	R446	A- 9B	R525	B- 8C	C23	A- 2E
Q7	B- 1C	D564	A- 8A	R76	B- 4E	R156	A- 1D	R254	A- 1E	R447	B- 9B	R526	B- 9C	C24	A- 2D
Q8	A- 1C			R77	B- 3E	R157	A- 1C	R255	B- 1E	R448	B- 9B	R527	B- 8C	C25	A- 2D
Q9	A- 1C	R1	B- 1B	R78	B- 4E	R158	A- 1C	R256	B- 1E	R449	B- 8B	R528	B- 8C	C26	A- 3E
Q10	A- 1B	R2	A- 1B	R79	B- 4E	R159	A- 1C	R257	B- 1E	R450	B- 9B	R529	B- 8C	C27	B- 2E
Q11	A- 1B	R3	B- 1B	R80	B- 4E	R160	B- 1C	R258	B- 1E	R451	B- 9B	R530	B- 8C	C28	B- 2E
Q12	A- 1C	R4	A- 1B	R81	B- 4E	R161	A- 1B	R259	A- 1E	R452	A- 5C	R531	A- 7C	C29	A- 3E
Q13	A- 1C	R5	A- 1B	R82	B- 4E	R162	A- 1B	R260	A- 2E	R453	B- 6C	R532	A- 7C	C30	A- 2E
Q14	A- 1B	R6	B- 1D	R83	B- 4E	R163	B- 1B	R261	B- 1E	R454	B- 6C	R533	A- 7C	C32	A- 3E
Q15	B- 3E	R7	B- 1D	R84	B- 4E	R164	A- 2B	R262	B- 1E	R455	B- 6C	R551	A- 2C	C33	A- 3E
Q16	B- 4E	R8	B- 1D	R85	B- 4E	R165	B- 1C	R263	B- 2E	R456	A- 7C	R552	A- 2C	C34	A- 3E
Q17	B- 5E	R9	B- 1D	R86	B- 4E	R166	B- 1B	R264	B- 1E	R457	A- 7C	R553	A- 3C	C35	A- 3E

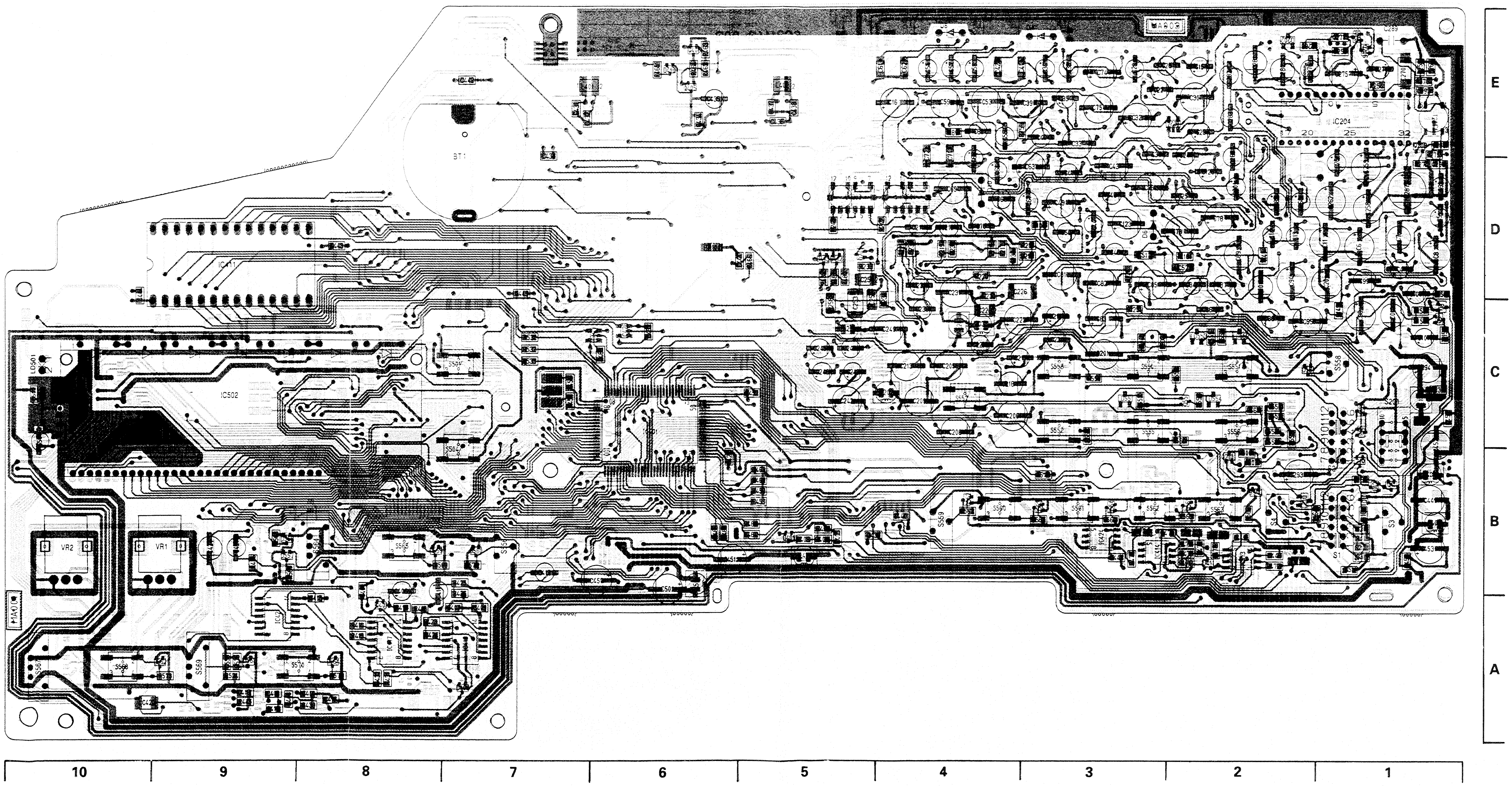
4.37 AUCP/A/C HEAD/SW3/MIC JACK/EAR CIRCUIT BOARDS

– Side A –

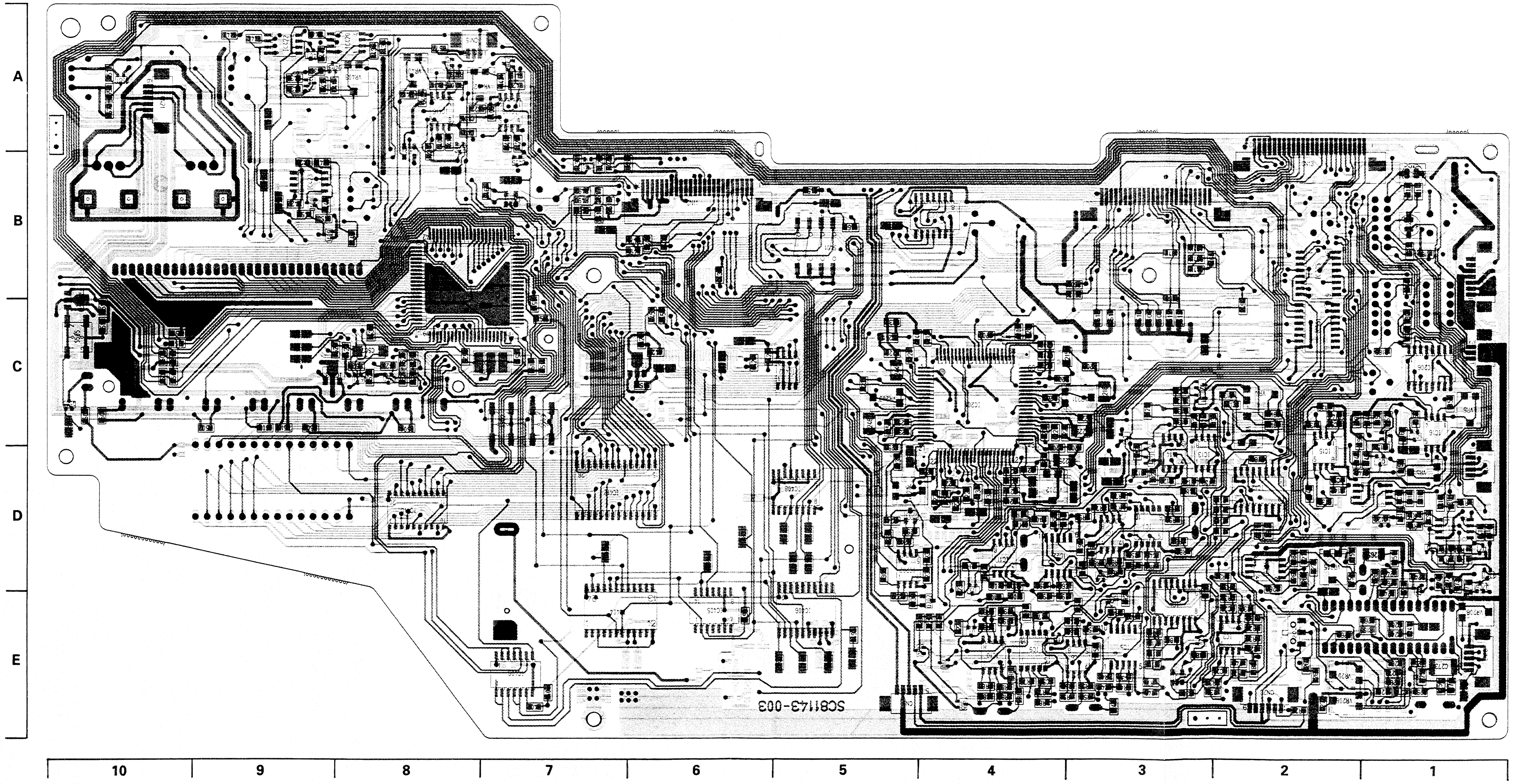


4.37 AUCP/A/C HEAD/SW3/MIC JACK/EAR CIRCUIT BOARDS

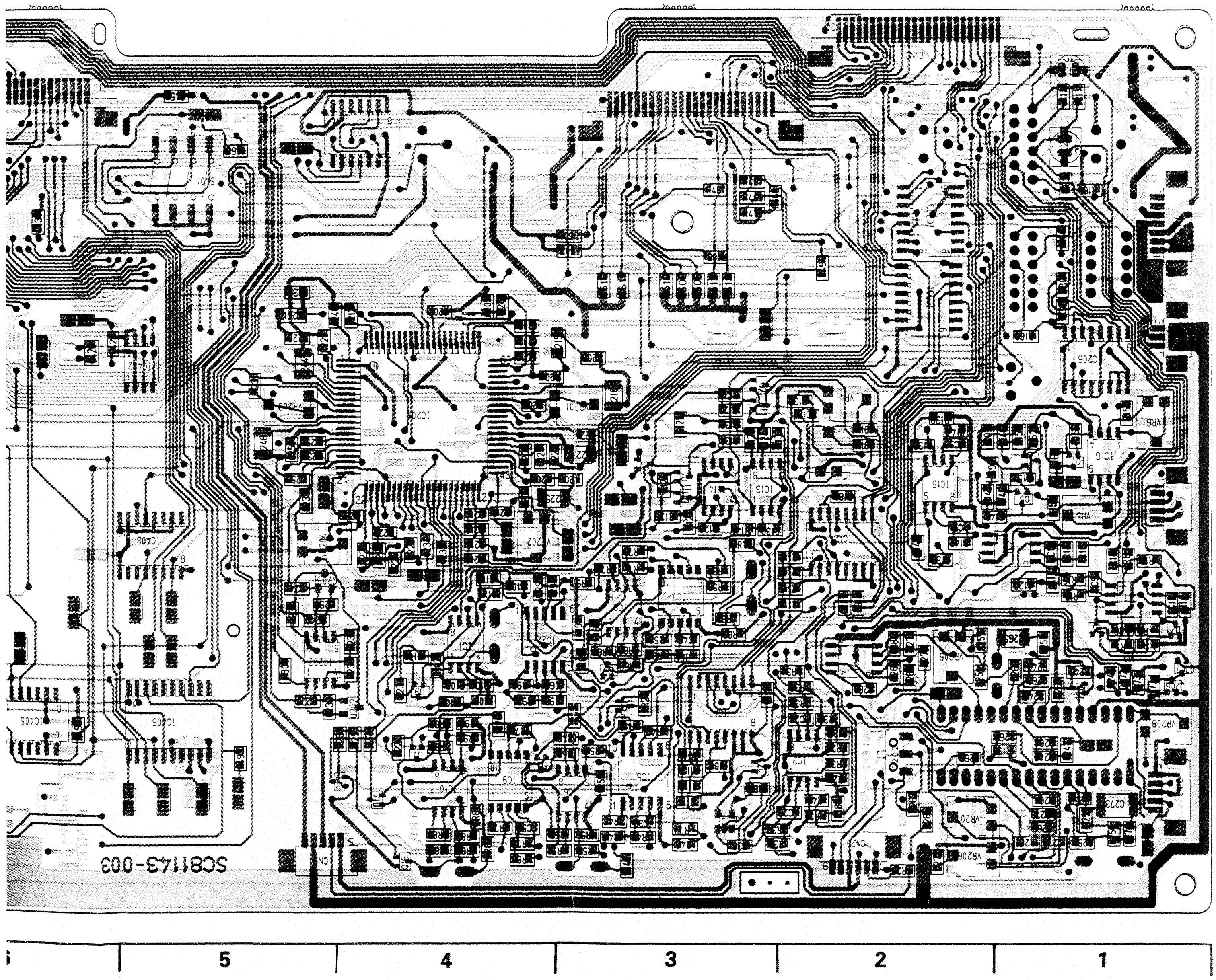
– Side A –


E
D
C
B
A
10
9
8
7
6
5
4
3
2
1
IC411
IC502
IC204
BT1
VR2
VR1
C289
C226
S558
S559
S560
S561
S562
S563
S564
S565
S566
S567
S568
S569
S570
S1
S3
S4

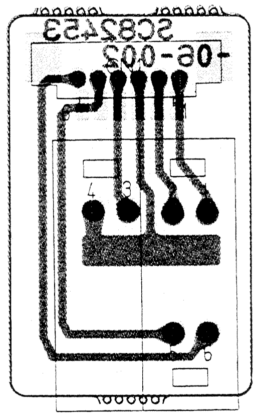
– Side B –


A
B
C
D
E
10
9
8
7
6
5
4
3
2
1
SC81143-003

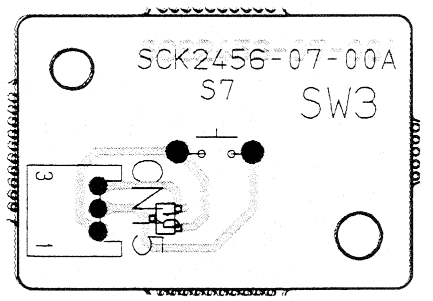
– Side B –



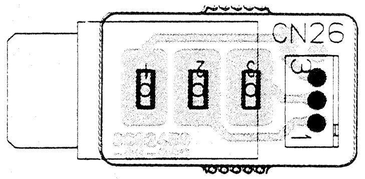
– A/C HEAD –



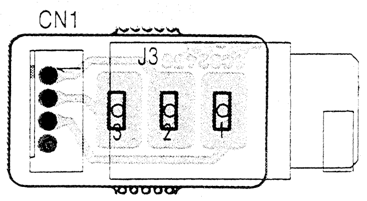
– SW3 –



– MIC JACK –

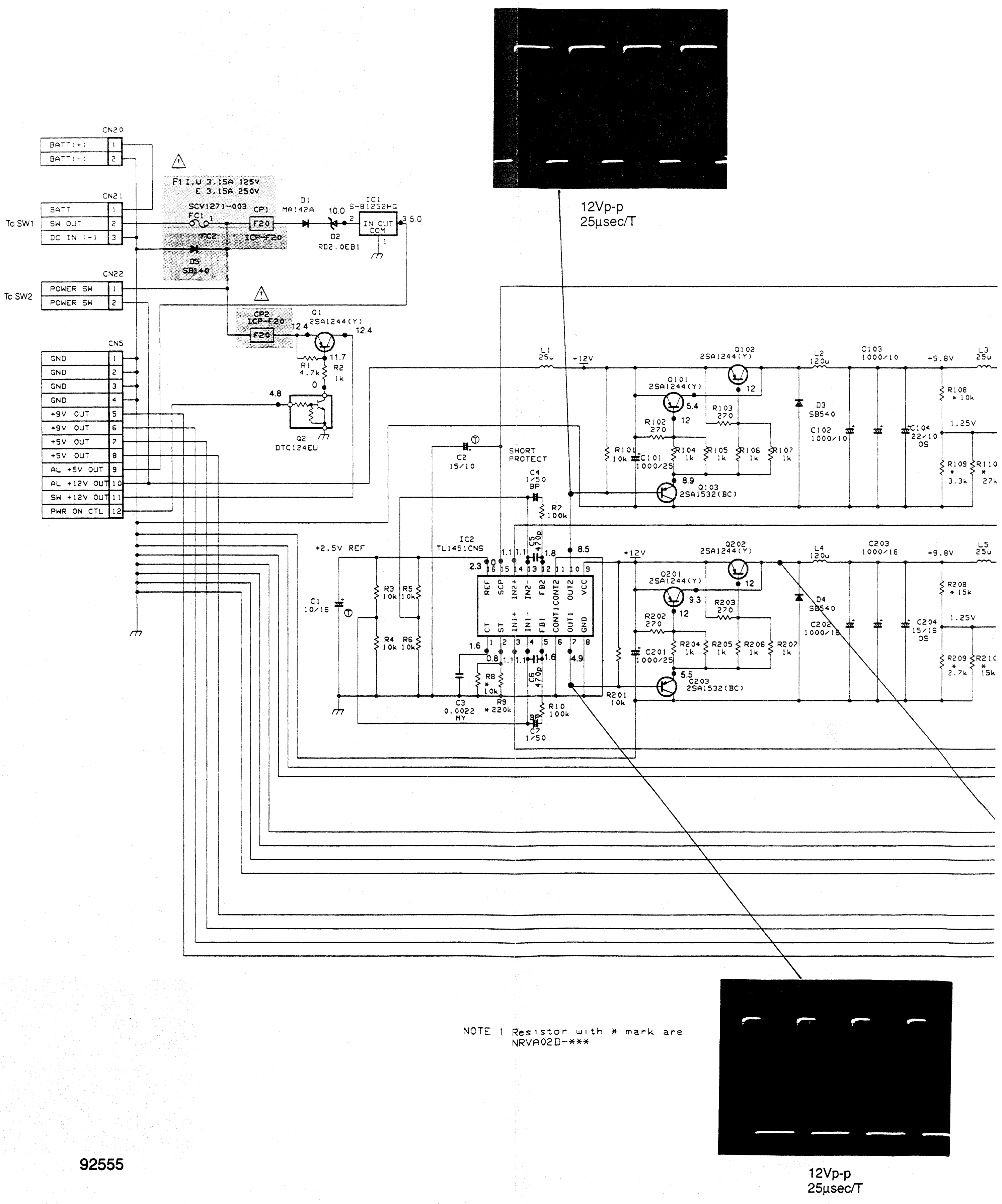


– EAR –



C36	A- 3E	C208	A- 4C	C283	A- 2E	C501	A- 6B	TP70	B- 5D
C37	B- 3E	C209	A- 4C	C284	B- 2D	C502	A- 10C	TP71	A- 2B
C38	A- 3E	C210	A- 4D	C285	A- 2D	C503	B- 9C	TP72	A- 2B
C39	A- 4E	C211	A- 4D	C286	B- 2D	C504	A- 10C	TP73	A- 2B
C40	A- 3E	C212	B- 4C	C287	A- 1D	C507	B- 8C	TP74	A- 3B
C41	A- 4E	C213	A- 4C	C288	A- 1E	C508	B- 3C	TP100	B- 6C
C42	A- 4E	C214	B- 4C	C289	A- 1E	C509	B- 3C	TP101	A- 6D
C43	A- 3D	C215	B- 4C	C290	A- 1D	C510	B- 3C		
C44	A- 3D	C216	A- 4C	C291	A- 1D	C511	B- 3C	BT1	A- 7E
C45	A- 3D	C217	A- 4C	C292	A- 1E	C512	B- 3C		
C46	B- 3D	C218	B- 3C	C293	A- 2B	C513	B- 3C	CN9	B- 5E
C47	A- 3D	C219	A- 3C	C294	A- 1C	C514	B- 7B	CN11	B- 6B
C48	A- 3D	C220	A- 3C	C300	A- 2B	C515	B- 7B	CN12	B- 3B
C49	A- 3D	C221	A- 4C	C301	A- 2D	C516	B- 3C	CN13	B- 2B
C50	A- 3D	C222	A- 4C	C401	B- 8A	C517	B- 7B	CN14	B- 1B
C51	A- 3D	C223	B- 3C	C402	B- 8A	C551	A- 2C	CN15	B- 8A
C52	A- 2D	C224	B- 3C	C403	B- 8A	C552	A- 2C	CN16	B- 1E
C53	A- 4E	C225	B- 4D	C404	A- 8B	C553	A- 2C	CN17	B- 1D
C54	A- 4E	C226	A- 4D	C405	B- 8A	C554	B- 10A	CN18	B- 1C
C55	A- 4E	C227	B- 4C	C406	A- 8B	C555	A- 9A	CN20	B- 2E
C56	B- 4E	C228	A- 4C	C407	A- 7A			CN21	B- 10A
C57	A- 4E	C229	B- 4C	C408	B- 7A	L1	B- 1B		
C58	A- 4E	C230	A- 4D	C409	A- 7A	L2	B- 1B	LC201	A- 4D
C59	A- 4E	C231	A- 4D	C410	B- 7A	L10	A- 1C	LC202	A- 5D
C60	A- 4E	C232	B- 4D	C411	A- 8B	L201	A- 4C		
C61	A- 5E	C233	A- 4D	C412	A- 7B	L202	A- 4C	LD501	A- 10C
C62	A- 4E	C234	B- 4D	C413	A- 8A	L203	A- 4C	LD551	A- 3C
C63	A- 3D	C235	A- 4D	C414	A- 8A	L204	A- 5C	LD552	A- 2C
C64	A- 4D	C236	A- 4D	C415	B- 9A	L205	A- 2D	LD553	A- 2C
C65	A- 4D	C237	A- 4D	C416	A- 8A	L401	A- 7E	LD554	A- 2C
C66	B- 4D	C238	A- 4C	C417	A- 9A	L402	A- 5E		
C67	A- 4D	C239	B- 5E	C418	A- 9A	L403	A- 5B	MA001	- 10A
C68	A- 4D	C240	B- 5C	C419	A- 9A	L404	A- 1B	MA003	- 2E
C69	A- 4D	C241	B- 5C	C420	A- 10A	L405	A- 1B		
C70	A- 4D	C242	A- 5C	C421	A- 9B	L501	A- 6B	S1	A- 1B
C71	A- 4D	C243	A- 5C	C422	B- 9B			S2	A- 1C
C72	A- 4D	C244	B- 5C	C423	B- 9B	TP2	B- 1E	S3	A- 1B
C73	A- 2D	C245	A- 5C	C424	A- 9B	TP3	B- 4D	S4	A- 2B
C74	A- 3E	C246	A- 5C	C425	B- 6C	TP4	B- 5D	S201	A- 1C
C75	A- 3E	C247	A- 5C	C426	B- 6C	TP5	B- 1E	S202	B- 2E
C76	A- 3D	C248	B- 5C	C427	A- 6B	TP6	B- 4D	S401	B- 5B
C78	A- 2D	C249	A- 4C	C428	B- 6C	TP7	B- 4D	S501	A- 7C
C81	A- 3D	C250	B- 5C	C429	B- 6C	TP8	B- 3D	S502	B- 7C
C82	A- 3D	C251	B- 5C	C430	B- 6B	TP9	B- 2E	S503	B- 7C
C83	A- 3C	C252	A- 5D	C431	A- 7E	TP10	B- 3D	S504	A- 7B
C84	A- 2D	C253	A- 5C	C432	A- 7E	TP11	B- 3C	S505	B- 10C
C85	A- 3D	C254	A- 5D	C433	A- 7D	TP12	B- 3D	S551	A- 2C
C86	A- 2C	C255	B- 5D	C434	A- 6E	TP13	B- 1D	S552	A- 3C
C87	A- 2D	C256	A- 5C	C435	A- 6E	TP41	B- 6C	S553	A- 3C
C88	A- 2C	C257	B- 5D	C436	A- 5E	TP42	B- 5E	S554	A- 3C
C89	A- 2D	C258	A- 1D	C437	A- 5E	TP43	B- 3C	S555	A- 3C
C90	A- 2D	C259	A- 1D	C438	A- 5E	TP44	B- 7B	S556	A- 2C
C91	B- 2D	C260	B- 1D	C439	A- 5B	TP45	B- 5D	S557	A- 4C
C93	B- 2C	C261	A- 1D	C440	A- 4B	TP46	B- 5D	S558	A- 1C
C94	A- 2D	C262	A- 1D	C441	A- 6D	TP51	B- 5B	S559	A- 4B
C95	A- 2C	C263	B- 1D	C442	A- 7E	TP52	B- 8B	S560	A- 4B
C96	B- 2C	C264	B- 1E	C443	A- 8D	TP53	B- 7B	S561	A- 3B
C97	B- 2C	C265	B- 1D	C444	A- 10D	TP54	B- 9A	S562	A- 3B
C98	A- 1C	C266	B- 1D	C445	A- 7D	TP55	B- 9B	S563	A- 2B
C99	A- 1D	C267	A- 2D	C446	A- 2B	TP56	B- 9B	S564	A- 8B
C100	A- 1D	C268	A- 2D	C447	A- 2B	TP57	B- 6C	S565	A- 8B
C101	A- 1C	C269	A- 1E	C448	A- 3B	TP58	B- 10C	S566	A- 7B
C102	A- 1C	C270	A- 1E	C449	A- 1B	TP59	B- 9C	S567	A- 10A
C123	A- 3D	C271	A- 1E	C450	A- 6B	TP60	B- 9C	S568	A- 10A
C124	B- 3C	C272	B- 2E	C451	A- 6B	TP61	B- 9C	S569	A- 9A
C125	B- 3C	C273	B- 1E	C452	A- 1C	TP62	B- 7D	S570	A- 9A
C126	A- 2D	C274	B- 1E	C453	A- 1B	TP63	B- 6D		
C127	B- 1D	C275	A- 1E	C454	B- 5B	TP64	B- 6D	T201	A- 1E
C130	A- 1C	C276	A- 2E	C455	A- 1C	TP65	B- 6E		
C201	A- 3C	C277	A- 1E	C456	A- 1B	TP66	B- 5E	BL1	A- 9C
C202	B- 4C	C278	B- 1E	C457	B- 7B	TP67	B- 5E		
C203	B- 4C	C279	B- 1E	C460	B- 5B	TP68	B- 5B	X401	A- 7C
C205	A- 4C	C280	A- 2E	C461	B- 8B	TP69	B- 5D	X501	B- 7C
C206	A- 4C	C281	A- 2E	C462	A- 6C				
C207	B- 4C	C282	A- 2E	C463	A- 6C				

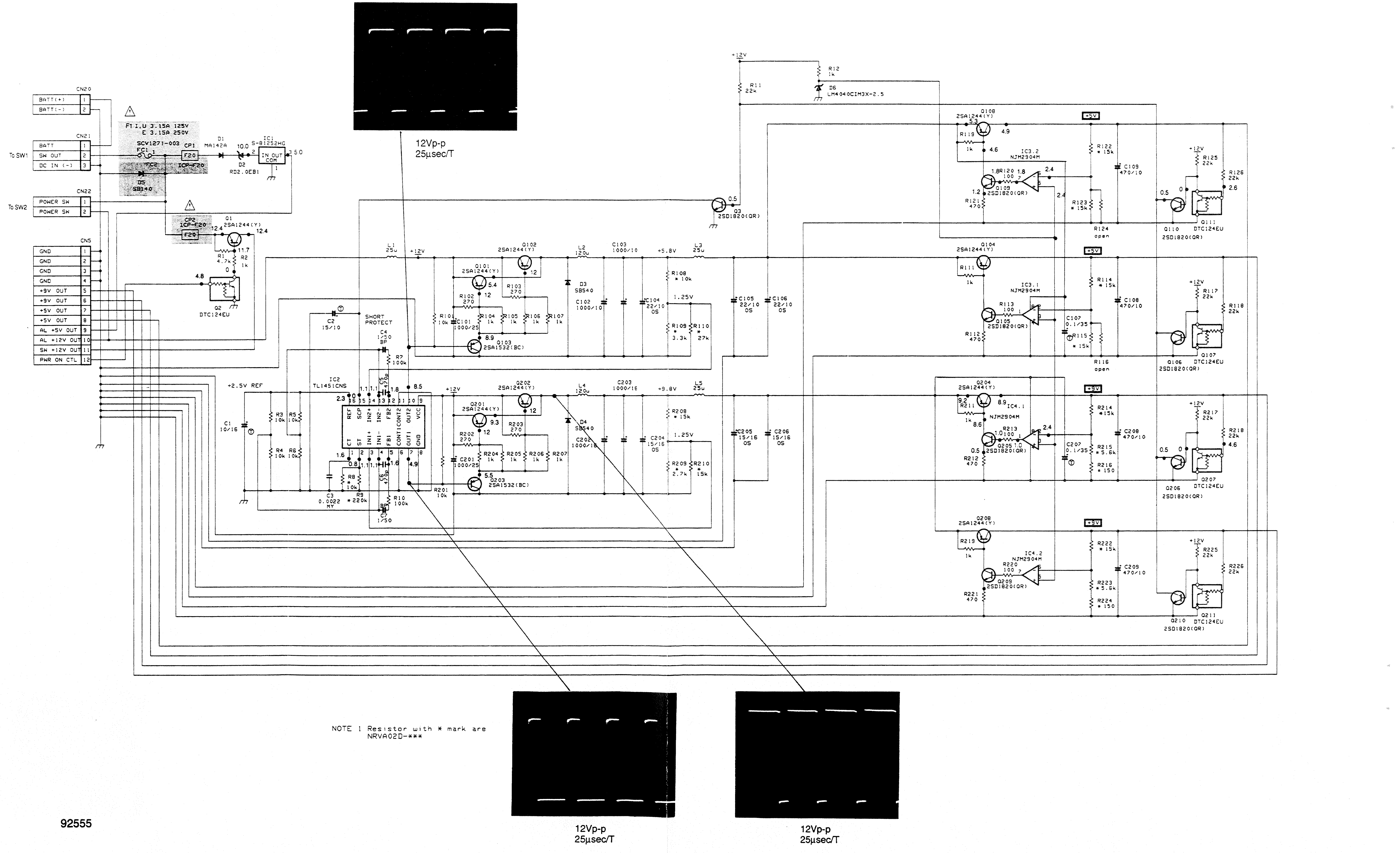
4.38 PS1 BOARD SCHEMATIC DIAGRAM 2 0


CN20
BATT(+) 1
BATT(-) 2
CN21
To SW1
BATT 1
SW OUT 2
DC IN (-) 3
CN22
To SW2
POWER SW 1
POWER SW 2
CN5
GND 1
GND 2
GND 3
GND 4
+9V OUT 5
+9V OUT 6
+5V OUT 7
+5V OUT 8
AL +5V OUT 9
AL +12V OUT 10
SW +12V OUT 11
PWR ON CTL 12
F1 I,U 3.15A 125V
E 3.15A 250V
SCV1271-003
FC1
FC2
CP1 F20
ICP-F20
D5 SB140
D1 MA142A
10.0
D2 RD2.0EB1
IC1 S-81252HG
IN OUT COM
5.0
CP2 ICP-F20
F20
Q1 2SA1244(Y)
12.4
12.4
11.7
R1 4.7k
R2 1k
0
4.8
Q2 DTC124EU
C2 15/10
SHORT PROTECT
C4 1/50 BP
R7 100k
C5 470p
IC2 TL1451CNS
+2.5V REF
REF SCP IN2+ IN2- FB2 CONT2 OUT2 VCC
CT ST IN1+ IN1- FB1 CONT1 OUT1 GND
2.3 0 1.1 1.1 1.8 8.5
1.6 0.8 1.1 1.1 1.6 4.9
C1 10/16
R3 10k
R5 10k
R4 10k
R6 10k
C3 0.0022 MY
R8 * 10k
R9 * 220k
C6 470p
R10 100k
C7 1/50 BP
L1 25u
+12V
Q101 2SA1244(Y)
Q102 2SA1244(Y)
5.4
12
12
R101 10k
C101 1000/25
R102 270
R103 270
R104 1k
R105 1k
R106 1k
R107 1k
8.9
Q103 2SA1532(BC)
D3 SB540
L2 120u
C102 1000/10
C103 1000/10
C104 22/10 OS
+5.8V
L3 25u
R108 * 10k
1.25V
R109 * 3.3k
R110 * 27k
+12V
Q201 2SA1244(Y)
Q202 2SA1244(Y)
9.3
12
12
R201 10k
C201 1000/25
R202 270
R203 270
R204 1k
R205 1k
R206 1k
R207 1k
5.5
Q203 2SA1532(BC)
D4 SB540
L4 120u
C202 1000/16
C203 1000/16
C204 15/16 OS
+9.8V
L5 25u
R208 * 15k
1.25V
R209 * 2.7k
R210 * 15k
12Vp-p
25µsec/T
12Vp-p
25µsec/T

NOTE : Resistor with * mark are NRVA02D-***

92555

4.38 PS1 BOARD SCHEMATIC DIAGRAM 2 0

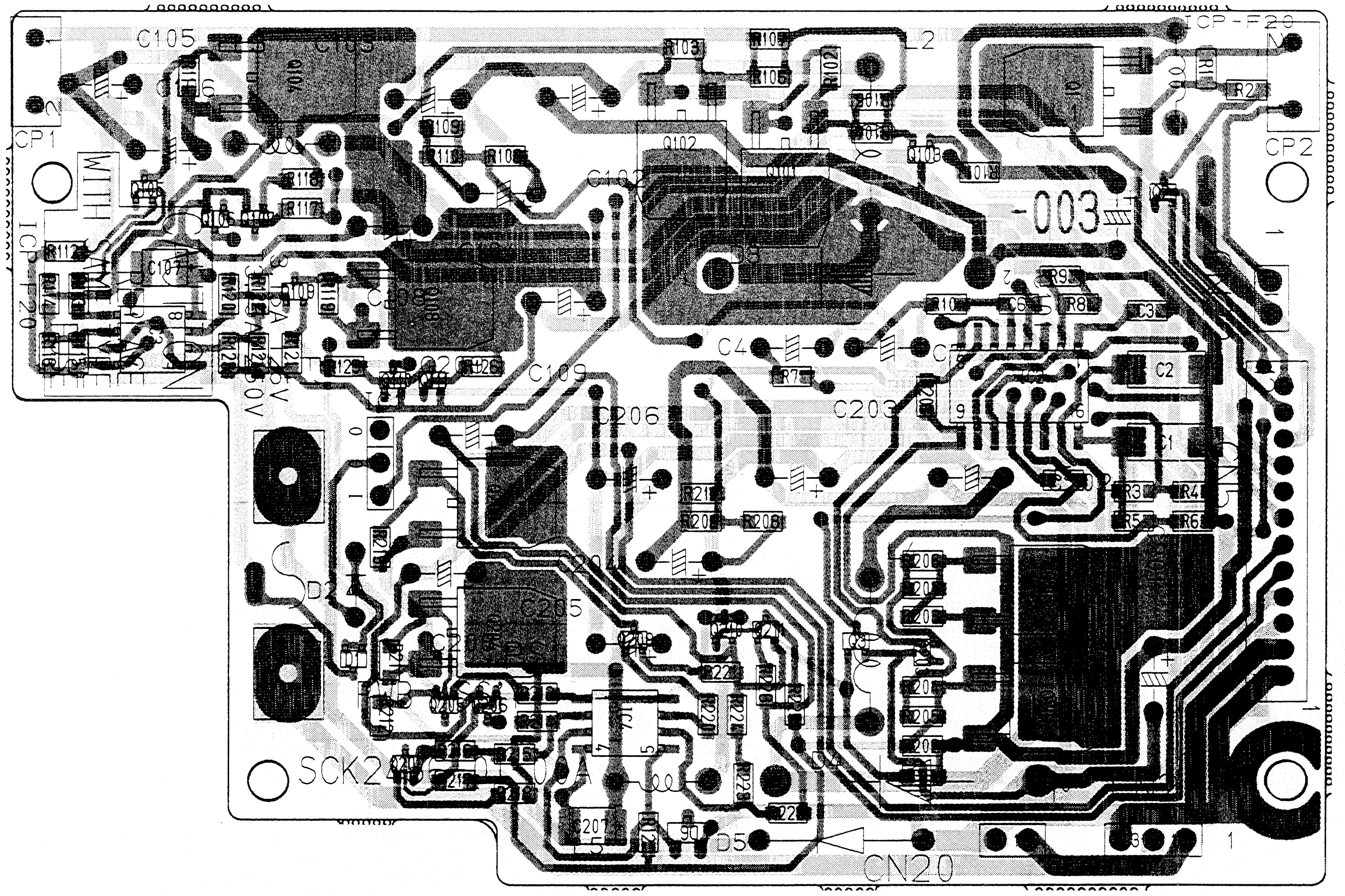


6
5
4
3
2
1
CN20
BATT(+)
BATT(-)
CN21
To SW1
BATT
SW OUT
DC IN (-)
CN22
To SW2
POWER SW
POWER SW
CN5
GND
+9V OUT
+5V OUT
AL +5V OUT
AL +12V OUT
SW +12V OUT
PWR ON CTL
F1 I,U 3.15A 125V
E 3.15A 250V
SCV1271-003
FC1
FC2
CP1
ICP-F20
D1 MA142A
D2 RD2.0EB1
IC1 S-81252HG
IN OUT COM
D5 SB140
CP2 ICP-F20
Q1 2SA1244(Y)
Q2 DTC124EU
R1 4.7k
R2 1k
12Vp-p
25μsec/T
SHORT PROTECT
C2 15/10
C4 1/50 BP
R7 100k
IC2 TL1451CNS
+2.5V REF
REF SCP IN2+ IN2- FB2 CONT2 OUT2 VCC
CT ST IN1+ IN1- FB1 CONT1 OUT1 GND
C1 10/16
R3 10k
R5 10k
R4 10k
R6 10k
C3 0.0022 MY
R8 10k
R9 220k
R10 100k
C7 1/50
L1 25μ
+12V
Q101 2SA1244(Y)
Q102 2SA1244(Y)
Q103 2SA1532(BC)
L2 120μ
C103 1000/10
+5.8V
L3 25μ
D3 SB540
C102 1000/10
C104 22/10 OS
R108 10k
R109 3.3k
R110 27k
C105 22/10 OS
C106 22/10 OS
Q201 2SA1244(Y)
Q202 2SA1244(Y)
Q203 2SA1532(BC)
L4 120μ
C203 1000/16
+9.8V
L5 25μ
D4 SB540
C202 1000/16
C204 15/16 OS
R208 15k
R209 2.7k
R210 15k
C205 15/16 OS
C206 15/16 OS
+12V
R11 22k
R12 1k
D6 LM4040CIM3X-2.5
Q3 2SD1820(QR)
Q108 2SA1244(Y)
IC3.2 NJM2904M
Q109 2SD1820(QR)
C109 470/10
Q110 2SD1820(QR)
Q111 DTC124EU
Q104 2SA1244(Y)
IC3.1 NJM2904M
Q105 2SD1820(QR)
C107 0.1/35
C108 470/10
Q106 2SD1820(QR)
Q107 DTC124EU
Q204 2SA1244(Y)
IC4.1 NJM2904M
Q205 2SD1820(QR)
C207 0.1/35
C208 470/10
Q206 2SD1820(QR)
Q207 DTC124EU
Q208 2SA1244(Y)
IC4.2 NJM2904M
Q209 2SD1820(QR)
C209 470/10
Q210 2SD1820(QR)
Q211 DTC124EU
+5V
+9V
NOTE 1 Resistor with * mark are NRVA02D-***
12Vp-p
25μsec/T
12Vp-p
25μsec/T
A
B
C
D
E
F
G
H

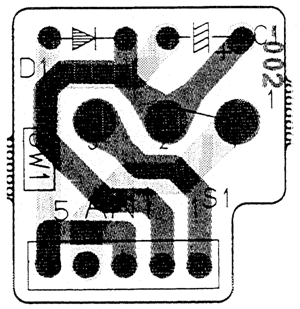
92555

4.39 PS1/SW1/SW2 CIRCUIT BOARDS

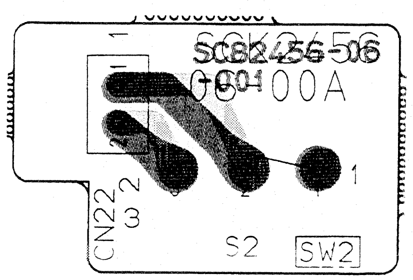
– PS1–


CP1
CP2
C105
L2
Q102
-003
C4
C2
C203
C206
C205
D2
D5
CN20
SCK24

– SW1 –



– SW2 –

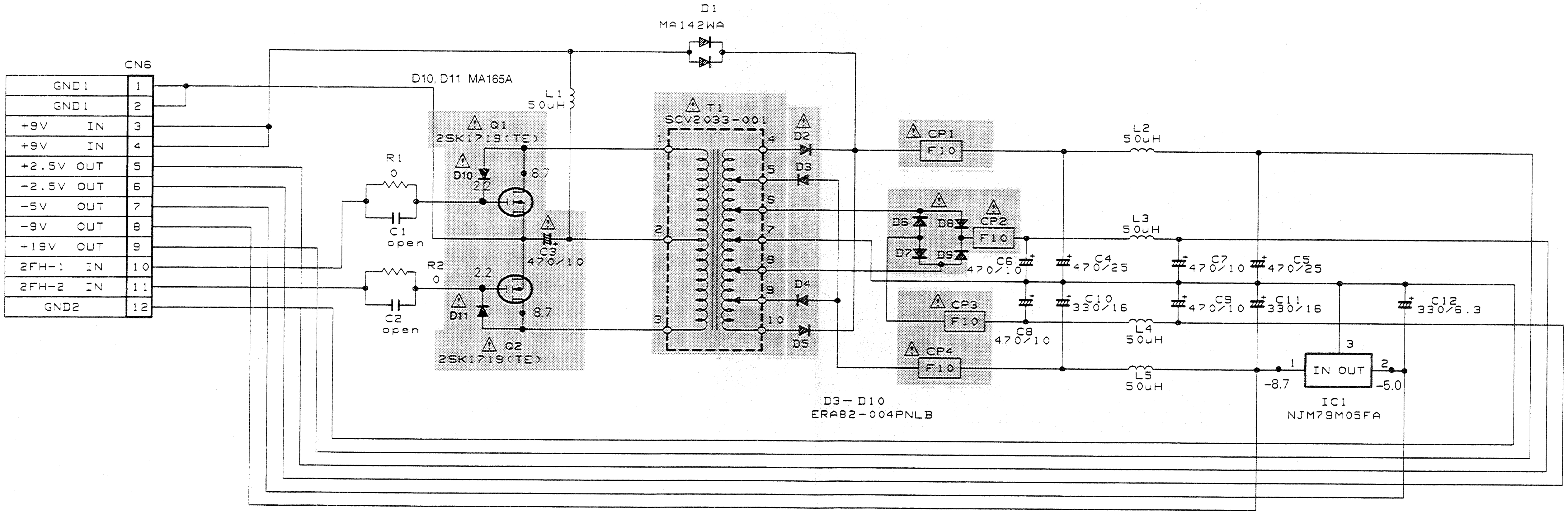

SCK2456
CN22
S2
SW2

6

4.40 PS2 BOARD SCHEMATIC DIAGRAM 2 5

5

4


CN6
GND1 1
GND1 2
+9V IN 3
+9V IN 4
+2.5V OUT 5
-2.5V OUT 6
-5V OUT 7
-9V OUT 8
+19V OUT 9
2FH-1 IN 10
2FH-2 IN 11
GND2 12
D1
MA142WA
D10, D11 MA165A
L1
50uH
R1
0
C1
open
R2
0
C2
open
⚠ Q1
2SK1719(TE)
⚠ D10
2.2
8.7
⚠ C3
470/10
2.2
⚠ D11
8.7
⚠ Q2
2SK1719(TE)
⚠ T1
SCV2033-001
1
2
3
4
5
6
7
8
9
10
⚠ D2
D3
D4
D5
D3— D10
ERA82-004PNLB
⚠ CP1
F10
⚠
D6
D7
D8
D9
⚠ CP2
F10
⚠ CP3
F10
⚠ CP4
F10
L2
50uH
L3
50uH
L4
50uH
L5
50uH
C6
470/10
C8
470/10
C4
470/25
C10
330/16
C7
470/10
C9
470/10
C5
470/25
C11
330/16
C12
330/6.3
IN OUT
1
2
3
-8.7
-5.0
IC1
NJM79M05FA

3

2

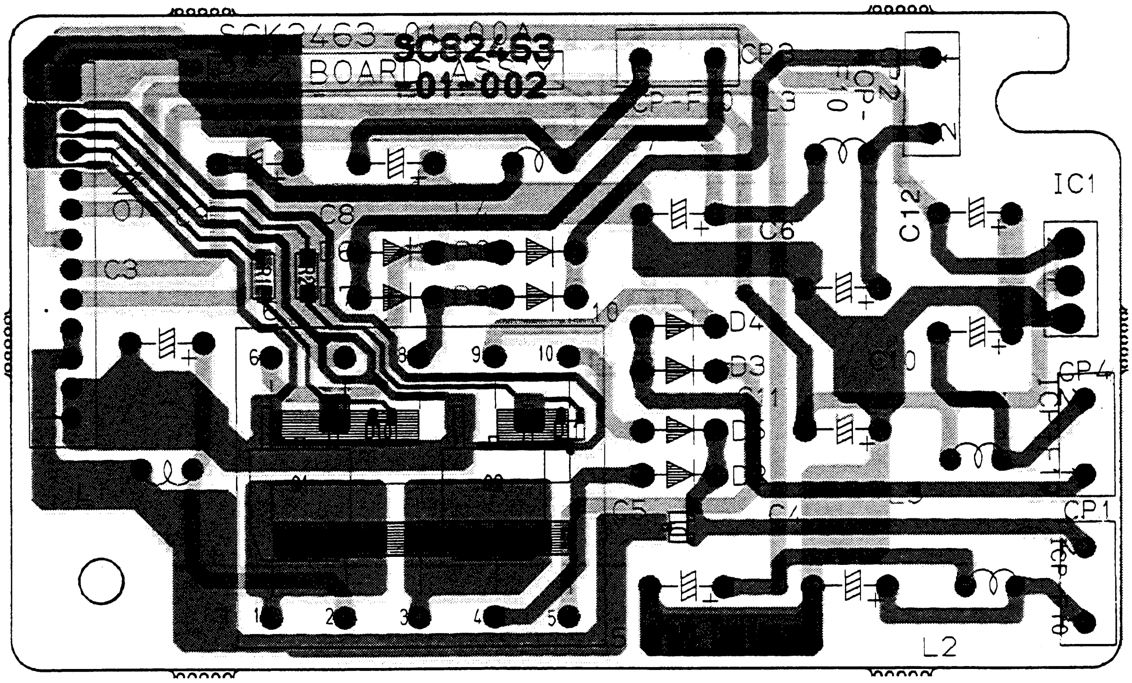
1

93405

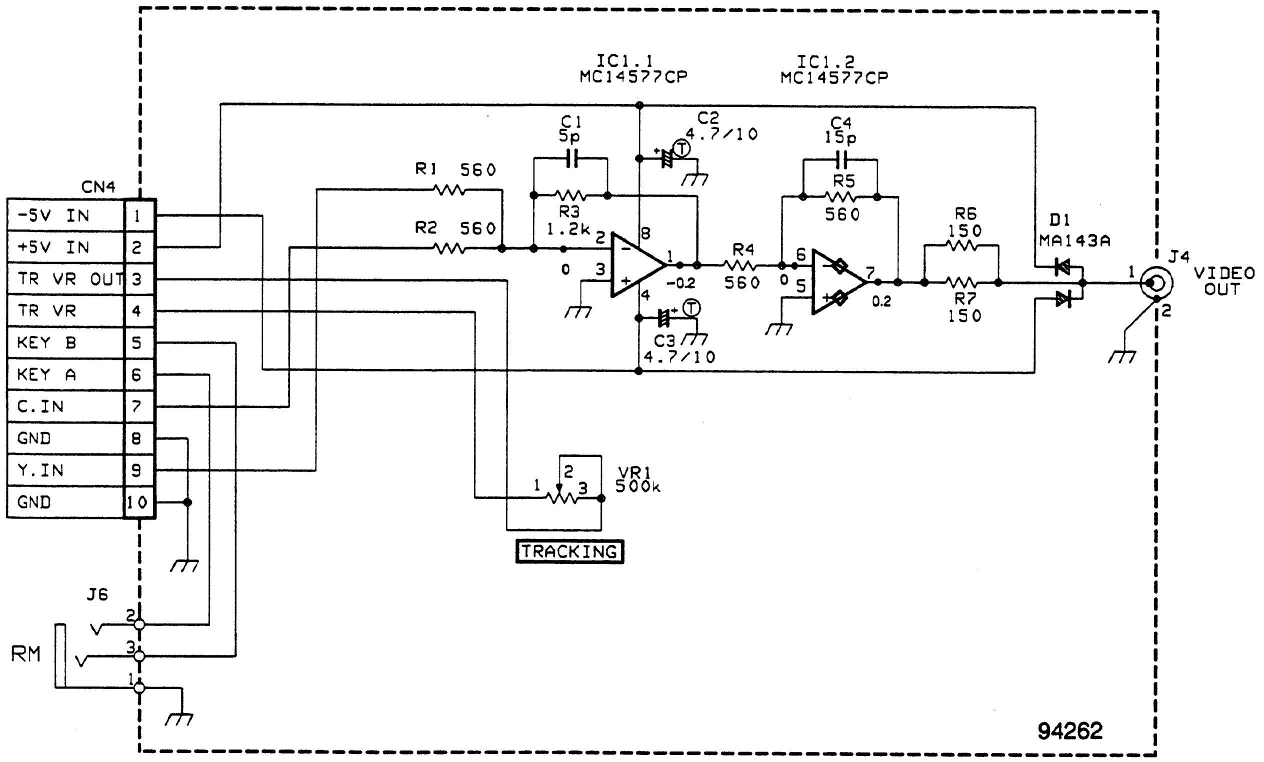
Revised in Feb. 1996.

A B C 4-46 4-46 E F G H

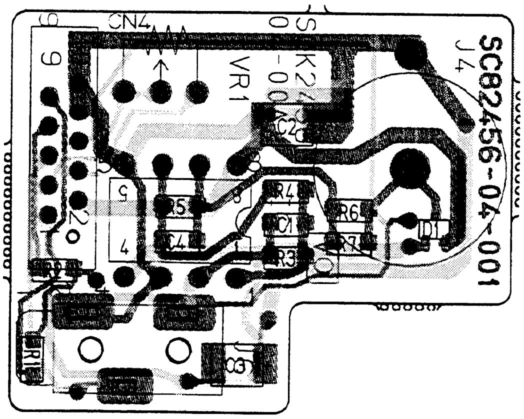
4.41 PS2 CIRCUIT BOARD


SC82463
-01-002
BOARD ASS'Y
CP-F
CP2
L3
C8
C3
C6
C12
IC1
D4
D3
D5
D2
C5
C4
CP4
CP1
L1
L2
R1
R2
1
2
3
4
5
6
8
9
10

4.42 VO BOARD SCHEMATIC DIAGRAM 2 6

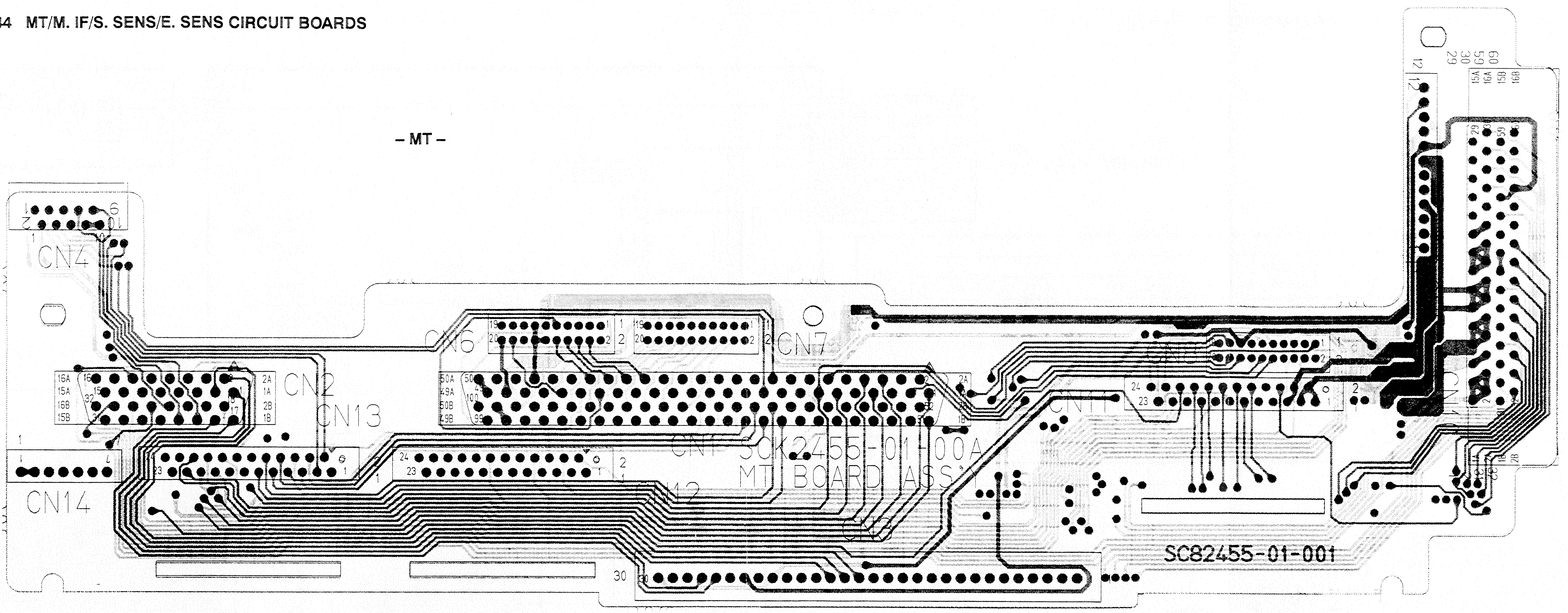

CN4
-5V IN 1
+5V IN 2
TR VR OUT 3
TR VR 4
KEY B 5
KEY A 6
C.IN 7
GND 8
Y.IN 9
GND 10
J6
RM
IC1.1
MC14577CP
IC1.2
MC14577CP
C1
5p
C2
4.7/10
C3
4.7/10
C4
15p
R1 560
R2 560
R3
1.2k
R4
560
R5
560
R6
150
R7
150
D1
MA143A
-0.2
0.2
VR1
500k
TRACKING
J4
VIDEO
OUT
94262

4.43 VO CIRCUIT BOARD

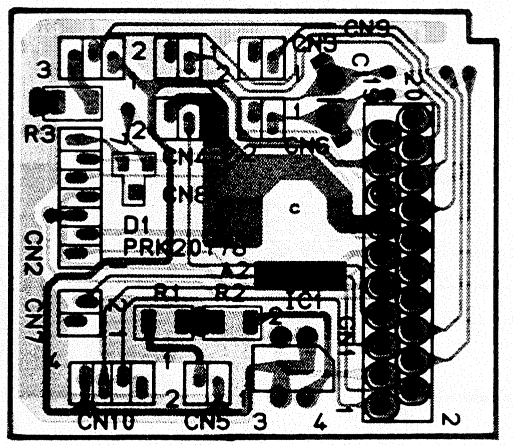

CN4
VR1
SC82456-04-001
J4
R5
C4
R4
IC1
R3
R6
R7
D1
R1
C2
C3
9
5
4
2
1
8

4.44 MT/M. IF/S. SENS/E. SENS CIRCUIT BOARDS

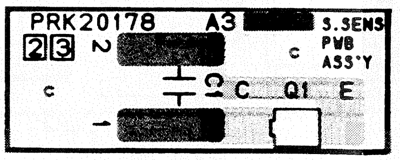
– MT –


CN4
CN6
CN7
CN2
CN13
CN1
CN14
CN12
CN3
CN11
SC82455-01-001

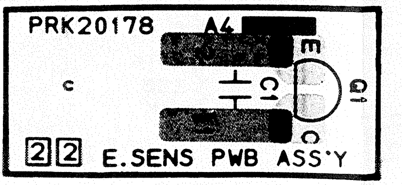
– M. IF –


CN9
CN3
CN4
CN6
CN8
R3
J2
D1
CN2
CN7
R1
R2
IC1
CN10
CN5

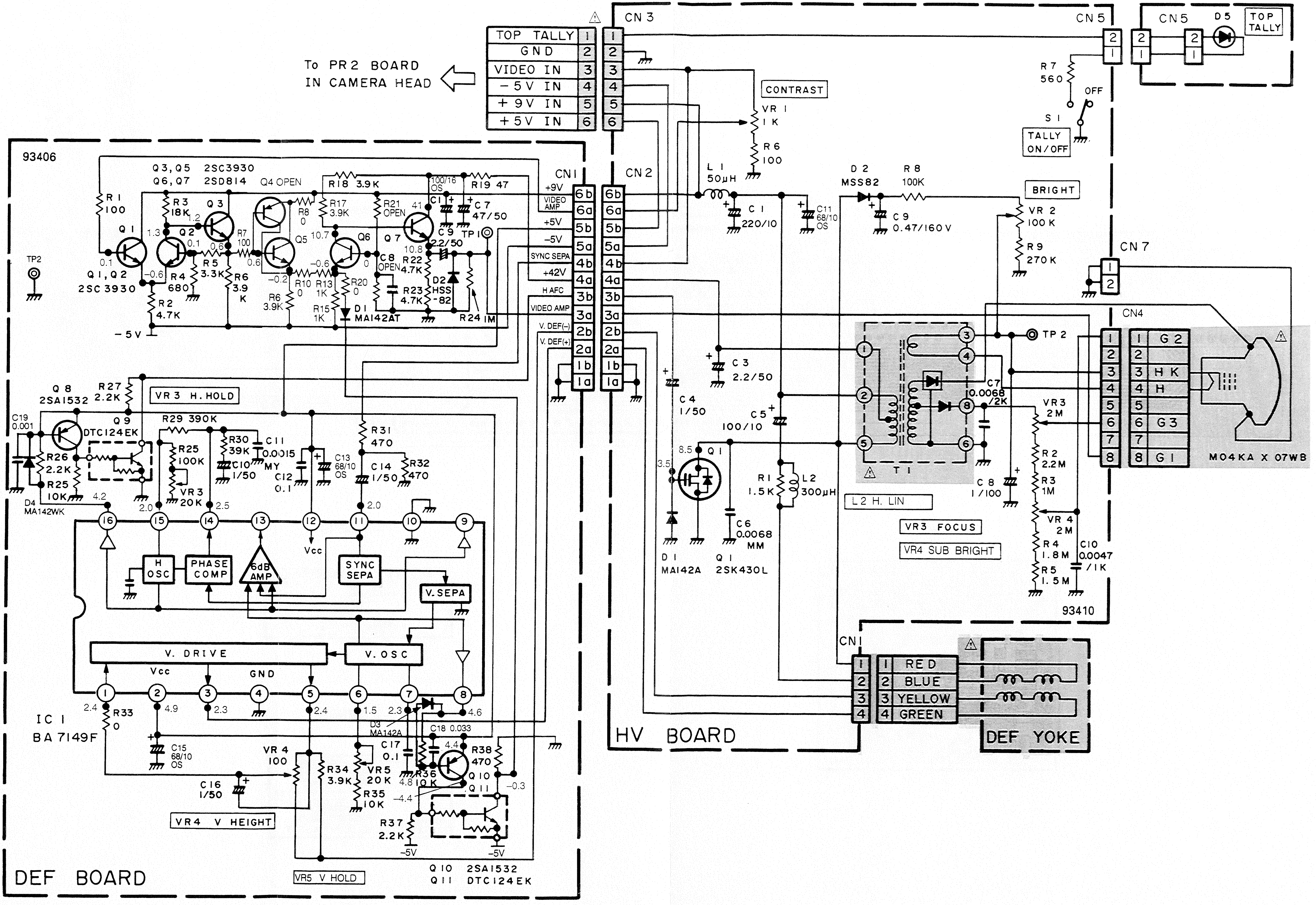
– S. SENS –


PRK20178 A3
S.SENS PWB ASS'Y
C1
Q1

– E. SENS –


PRK20178 A4
C1
Q1
E.SENS PWB ASS'Y

4.45 VF OVERALL WIRING DIAGRAM (HV/DEF) 2 9 / 3 0


To PR2 BOARD IN CAMERA HEAD
TOP TALLY 1
GND 2
VIDEO IN 3
−5V IN 4
+9V IN 5
+5V IN 6
CN 3
CN 5
CN 5
D5
TOP TALLY
R7 560
OFF
S1
TALLY ON/OFF
CONTRAST
VR 1 1K
R6 100
L1 50μH
C1 220/10
C11 68/10 OS
D2 MSS82
R8 100K
C9 0.47/160V
BRIGHT
VR 2 100K
R9 270K
CN 7
CN 2
CN4
TP 2
C3 2.2/50
C4 1/50
C5 100/10
Q1
D1 MA142A
Q1 2SK430L
R1 1.5K
L2 300μH
C6 0.0068 MM
L2 H. LIN
T1
C7 0.0068 /2K
C8 1/100
VR3 2M
R2 2.2M
R3 1M
VR4 2M
R4 1.8M
R5 1.5M
C10 0.0047 /1K
VR3 FOCUS
VR4 SUB BRIGHT
93410
G2
HK
H
G3
G1
M04KA X 07WB
CN1
RED
BLUE
YELLOW
GREEN
DEF YOKE
HV BOARD
93406
Q3, Q5 2SC3930
Q6, Q7 2SD814
Q4 OPEN
R18 3.9K
R19 47
CN1
+9V
VIDEO AMP
+5V
−5V
SYNC SEPA
+42V
H AFC
VIDEO AMP
V. DEF(−)
V. DEF(+)
R1 100
R3 18K
Q3
Q2
Q1
Q1, Q2 2SC3930
R4 680
R5 3.3K
R6 3.9K
R7 100
Q5
R8 0
R17 3.9K
R21 OPEN
Q6
Q7
C1
C7 47/50
C9 22/50
TP1
C8 OPEN
R22 4.7K
R23 4.7K
D2 HSS-82
R24 1M
R2 4.7K
R6 3.9K
R10 0
R13 1K
R15 1K
R20 0
D1 MA142AT
−5V
TP2
Q8 2SA1532
R27 2.2K
VR3 H. HOLD
C19 0.001
Q9 DTC124EK
R26 2.2K
R25 10K
D4 MA142WK
R29 390K
R25 100K
VR3 20K
R30 39K
C11 0.0015 MY
C10 1/50
C12 0.1
C13 68/10 OS
R31 470
C14 1/50
R32 470
H OSC
PHASE COMP
6dB AMP
SYNC SEPA
V. SEPA
Vcc
V. DRIVE
V. OSC
Vcc
GND
IC 1 BA7149F
R33 0
C15 68/10 OS
C16 1/50
VR4 100
VR4 V HEIGHT
R34 3.9K
VR5 20K
R35 10K
D3 MA142A
C17 0.1
C18 0.033
R36 10K
R38 470
Q10
Q11
R37 2.2K
−5V
−5V
VR5 V HOLD
Q10 2SA1532
Q11 DTC124EK
DEF BOARD

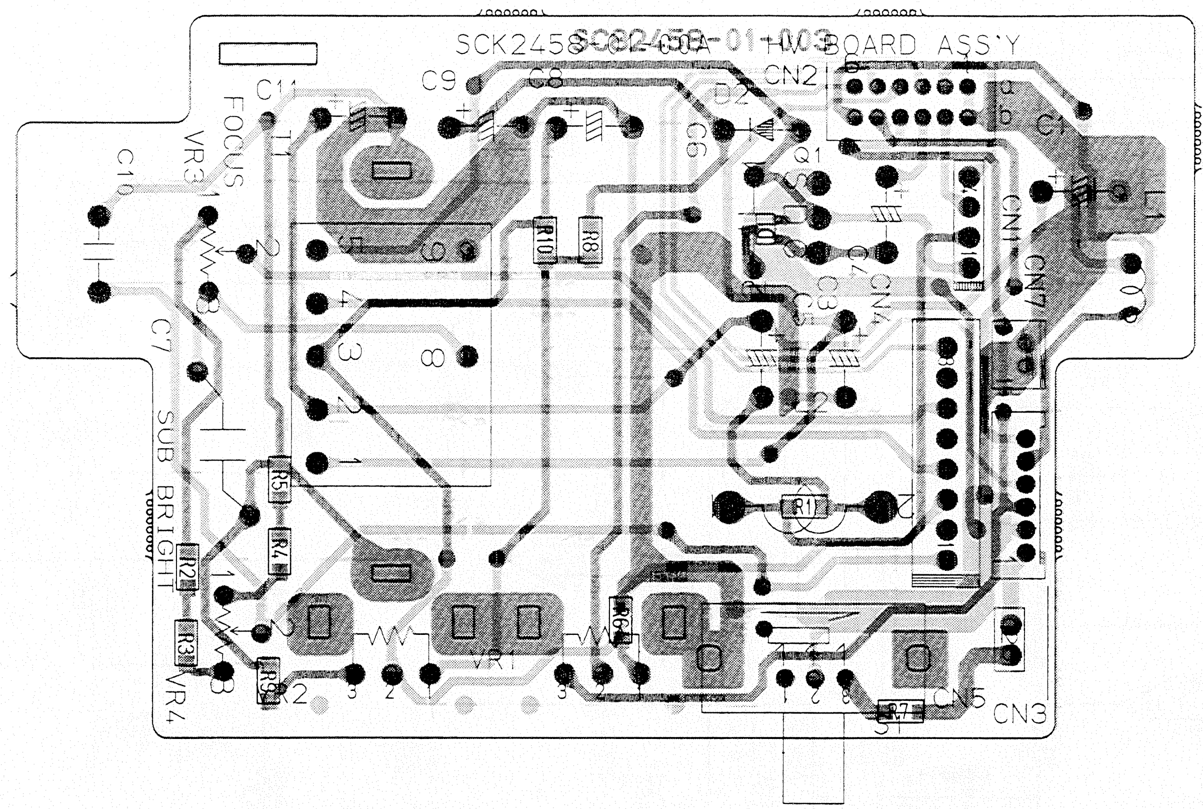
Revised in Feb. 1996.

6
5
4
3
2
1

A B C D E F G H

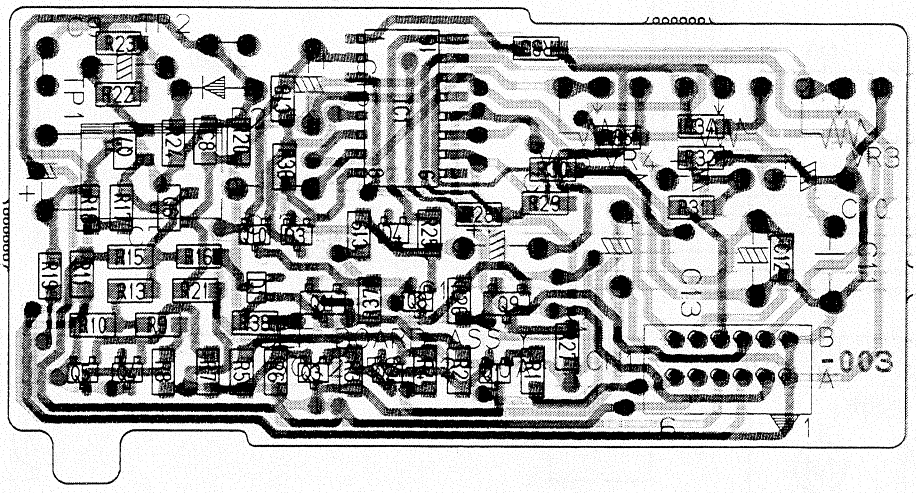
4.46 HV/DEF CIRCUIT BOARDS

– HV –



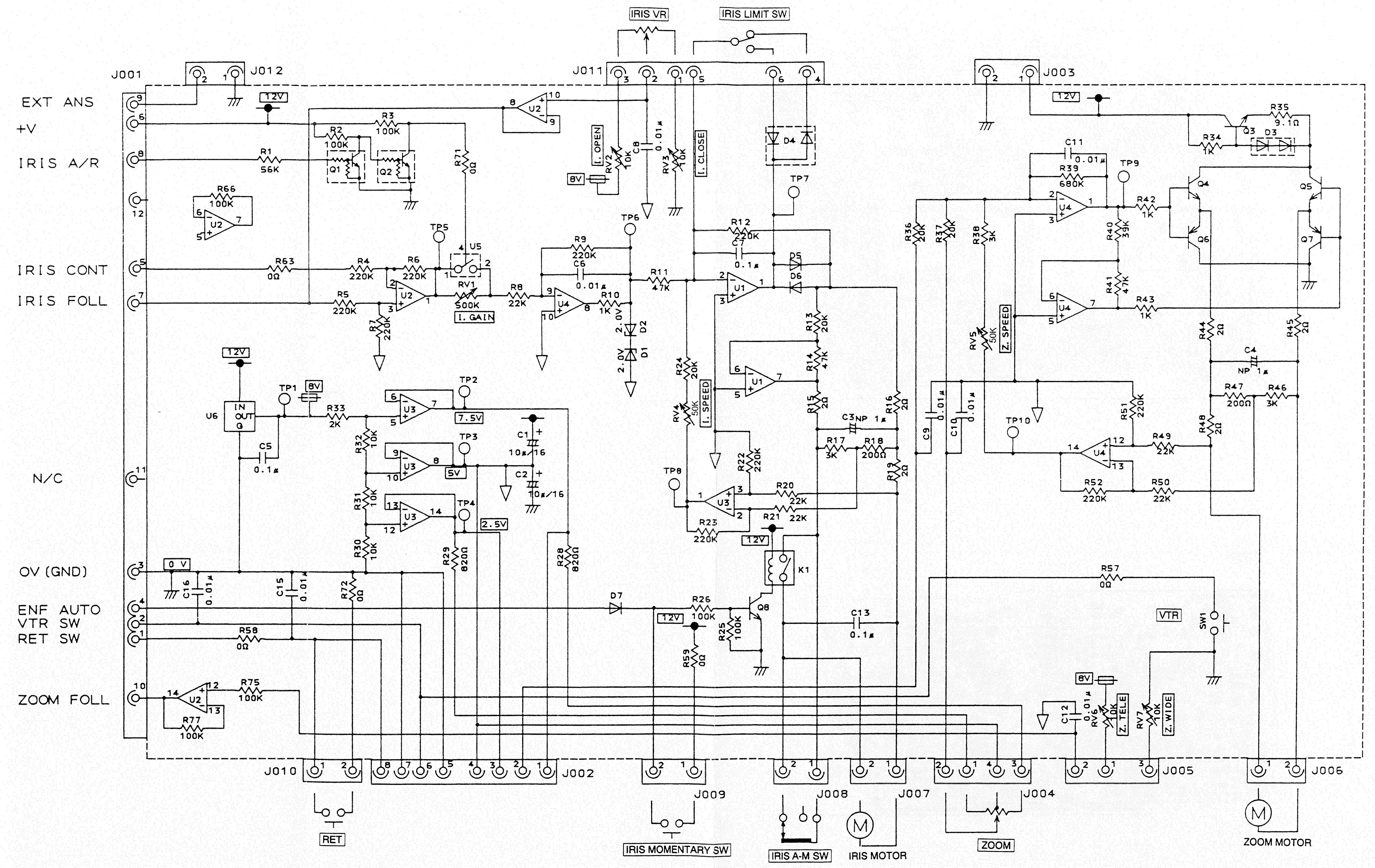
SCK2458-01-003A HV BOARD ASS'Y
C11
FOCUS
VR3
C10
C9
C8
C6
D2
CN2
C1
Q1
CN1
CN7
CN4
C3
C5
R10
R8
C7
SUB BRIGHT
R5
R4
R2
R3
R9
VR4
VR2
VR1
R6
R1
R7
CN5
CN3
S1

– DEF –



TP2
TP1
R23
R22
IC1
R34
R3
VR4
R32
R33
R30
R29
R28
C10
C11
C13
R15
R16
R13
R21
R19
R10
R9
ASS'Y
B
A
-003
6
1

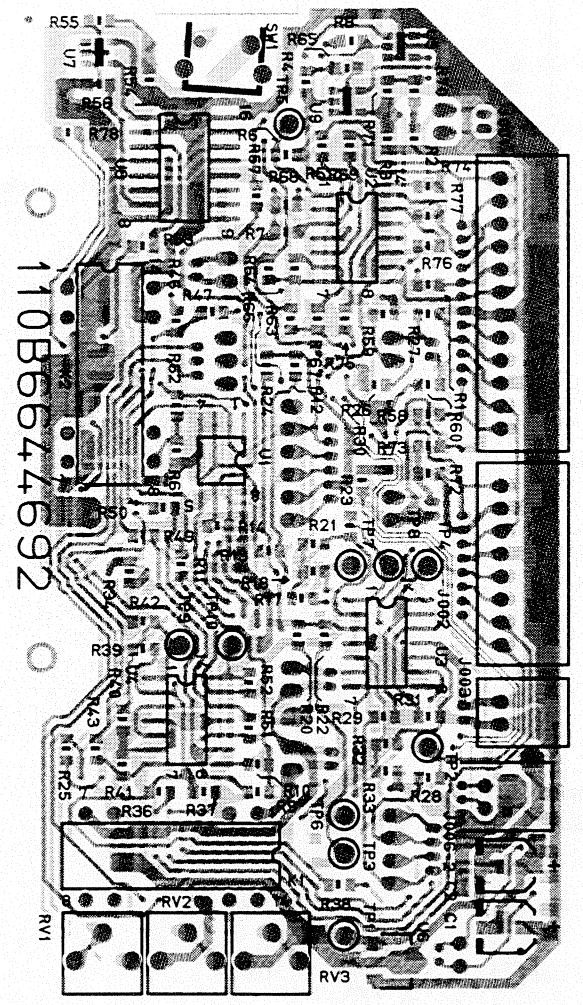
4.47 IRIS ZOOM AMP BOARD SCHEMATIC DIAGRAM 3 1


J001
EXT ANS
+V
IRIS A/R
IRIS CONT
IRIS FOLL
N/C
0V (GND)
ENF AUTO
VTR SW
RET SW
ZOOM FOLL
J012
J011
J003
IRIS VR
IRIS LIMIT SW
I. OPEN
I. CLOSE
I. GAIN
I. SPEED
Z. SPEED
Z. TELE
Z. WIDE
12V
8V
7.5V
5V
2.5V
0 V
U1
U2
U3
U4
U5
U6
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
K1
SW1
VTR
D1
D2
D3
D4
D5
D6
D7
RV1 500K
RV2 10K
RV3 10K
RV4 50K
RV5 50K
RV6 10K
RV7 10K
TP1
TP2
TP3
TP4
TP5
TP6
TP7
TP8
TP9
TP10
R1 56K
R2 100K
R3 100K
R4 220K
R5 220K
R6 220K
R7 220K
R8 22K
R9 220K
R10 1K
R11 47K
R12 220K
R13 20K
R14 47K
R15 2Ω
R16 2Ω
R17 3K
R18 200Ω
R19 2Ω
R20 22K
R21 22K
R22 220K
R23 220K
R24 20K
R25 100K
R26 100K
R28 820Ω
R29 820Ω
R30 10K
R31 10K
R32 10K
R33 2K
R34 1K
R35 9.1Ω
R36 20K
R37 20K
R38 3K
R39 680K
R40 39K
R41 47K
R42 1K
R43 1K
R44 2Ω
R45 2Ω
R46 3K
R47 200Ω
R48 2Ω
R49 22K
R50 22K
R51 220K
R52 220K
R57 0Ω
R58 0Ω
R59 0Ω
R63 0Ω
R66 100K
R71 0Ω
R72 0Ω
R75 100K
R77 100K
C1 10μ/16
C2 10μ/16
C3 NP 1μ
C4 NP 1μ
C5 0.1μ
C6 0.01μ
C7 0.1μ
C8 0.01μ
C9 0.01μ
C10 0.01μ
C11 0.01μ
C12 0.01μ
C13 0.1μ
C15 0.01μ
C16 0.01μ
2.0V
2.0V
J010
J002
J009
J008
J007
J004
J005
J006
RET
IRIS MOMENTARY SW
IRIS A-M SW
IRIS MOTOR
ZOOM
ZOOM MOTOR
M

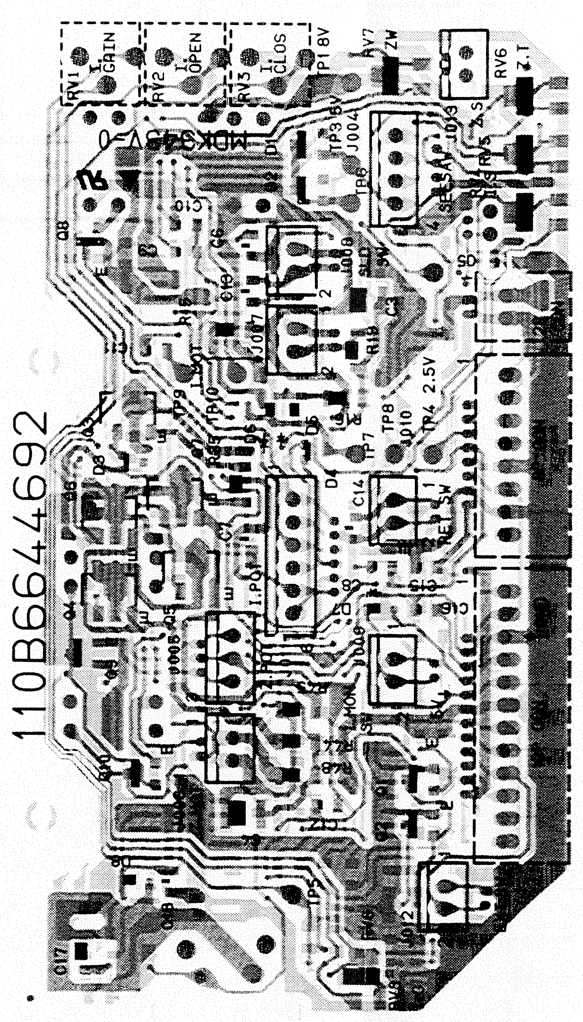
6
5
4
3
2
1
A
B
C
D
E
F
G
H

4.48 IRIS ZOOM AMP CIRCUIT BOARD

– Side A –

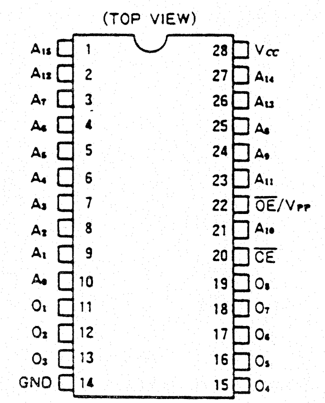

110B6644692
R55
U1
R78
R76
R77
R74
R21
R39
R25
R41
R36
R37
R28
R38
R33
RV1
RV2
RV3

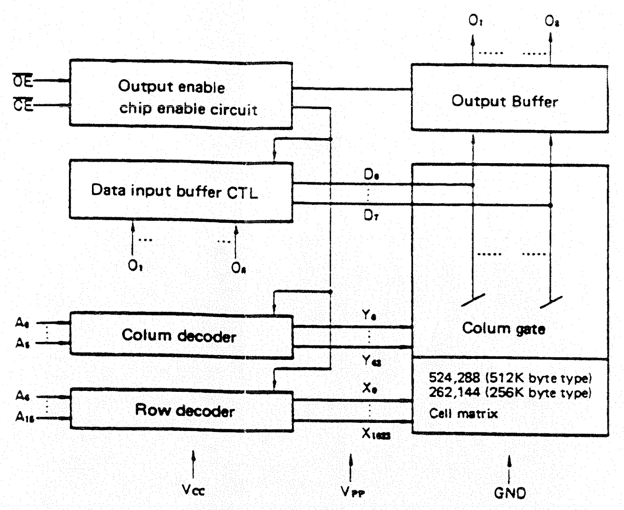
– Side B –


110B6644692
RV1
GAIN
RV2
OPEN
RV3
CLOS
RV7
ZW
RV6
Z.T
TP1 8V
J004
TP8
2.5V
Q8
C17

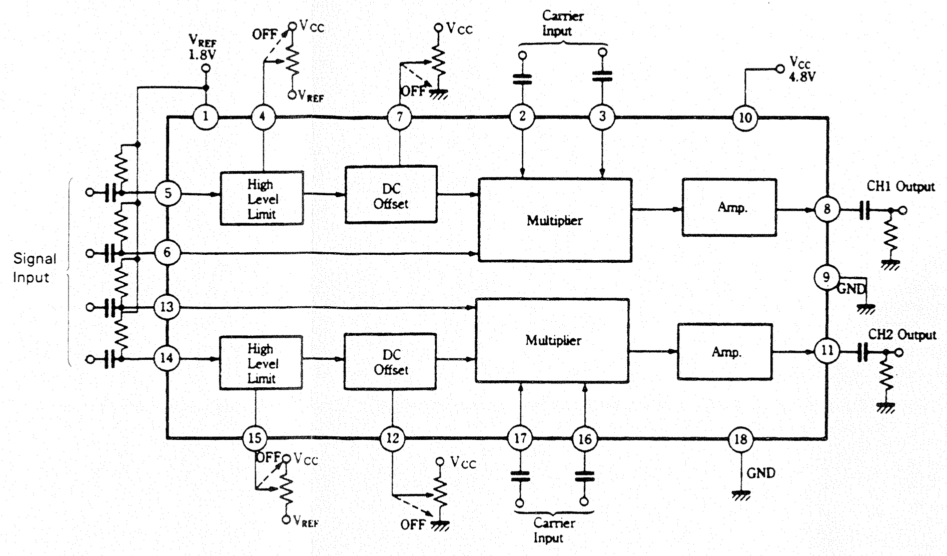
4.49 SCHEMATIC DIAGRAM of IC's

■ AM27C512-150DC 【AMD】
(512K Byte one time P-ROM)


(TOP VIEW)
A15 1
A12 2
A7 3
A6 4
A5 5
A4 6
A3 7
A2 8
A1 9
A0 10
O1 11
O2 12
O3 13
GND 14
28 Vcc
27 A14
26 A13
25 A8
24 A9
23 A11
22 OE/VPP
21 A10
20 CE
19 O8
18 O7
17 O6
16 O5
15 O4


O1 O8
OE
CE
Output enable chip enable circuit
Output Buffer
Data input buffer CTL
D8
D7
O1 O8
A0 A5
Colum decoder
Y0 Y63
Colum gate
A6 A15
Row decoder
X0 X1023
524,288 (512K byte type)
262,144 (256K byte type)
Cell matrix
Vcc
VPP
GND

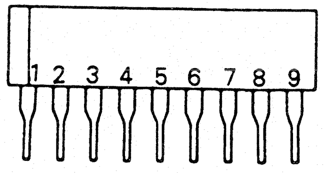
■ AN2020S 【MATSUSHITA】
(Dual Balanced Modulator)


VREF 1.8V
OFF
Vcc
VREF
Carrier Input
Vcc 4.8V
Signal Input
High Level Limit
DC Offset
Multiplier
Amp.
CH1 Output
GND
CH2 Output
OFF
Carrier Input
GND
1 4 7 2 3 10 5 6 13 14 8 9 11 15 12 17 16 18

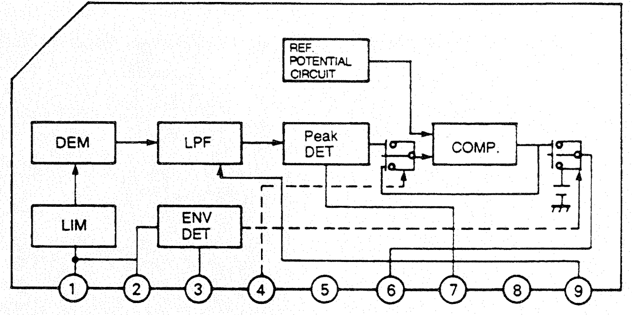
■ **Pin function**

Pin No.	Pin Name	Pin No.	Pin Name
1	V_{REF} (1.8V)	10	V_{CC} (4.8V)
2	CH1 Carrier Input 1	11	CH2 Output
3	CH1 Carrier Input 2	12	CH2 DC Offset
4	CH1 High Level Limit	13	CH2 Signal Input 2
5	CH1 Signal Input 1	14	CH2 Signal Input 1
6	CH1 Signal Input 2	15	CH2 High Level Limit
7	CH1 DC Offset	16	CH2 Carrier Input 2
8	CH1 Output	17	CH2 Carrier Input 1
9	GND	18	GND

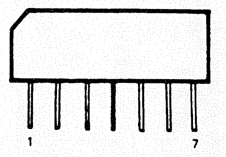
■ AN3398 【MATSUSHITA】
(VTR S-VHS Detector)

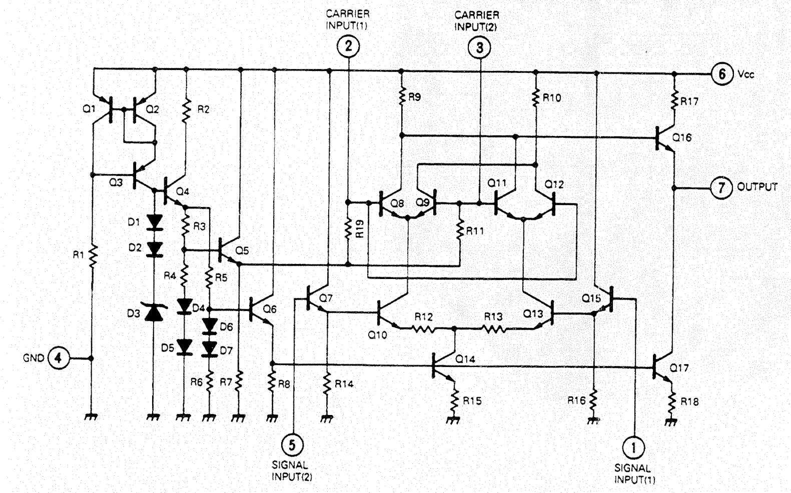


VTR S-VHS Detector


REF. POTENTIAL CIRCUIT
DEM
LPF
Peak DET
COMP.
LIM
ENV DET
1 2 3 4 5 6 7 8 9

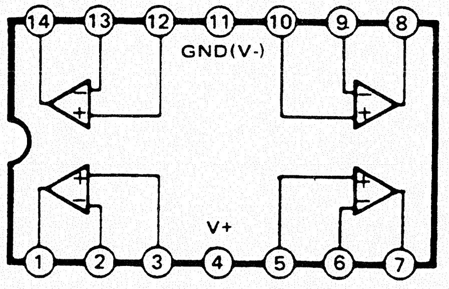
■ AN614 【MATSUSHITA】
(Balanced Modulator)



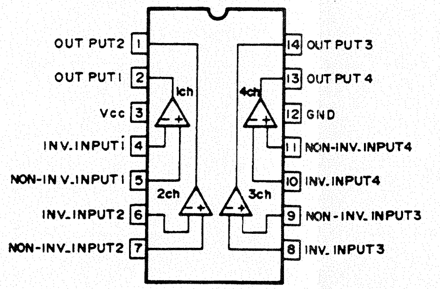

CARRIER INPUT(1)
CARRIER INPUT(2)
2
3
6 Vcc
7 OUTPUT
Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8 Q9 Q10 Q11 Q12 Q13 Q14 Q15 Q16 Q17
R1 R2 R3 R4 R5 R6 R7 R8 R9 R10 R11 R12 R13 R14 R15 R16 R17 R18 R19
D1 D2 D3 D4 D5 D6 D7
GND 4
5 SIGNAL INPUT(2)
1 SIGNAL INPUT(1)

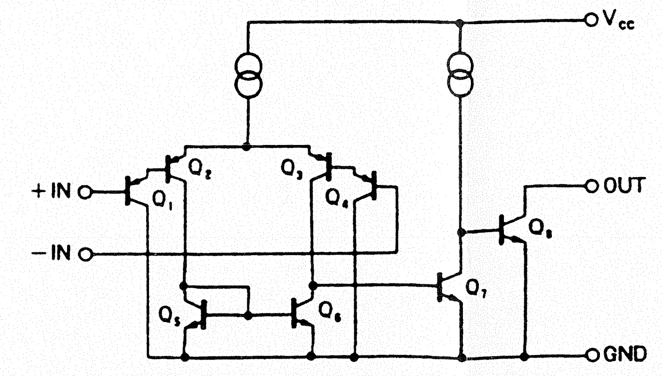
AN614 SCHEMATIC DIAGRAM

■ BA10324F 【ROHM】
(Quad Ground Sense Operational Amplifiers)

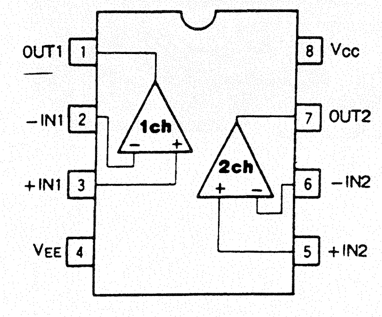

14 13 12 11 10 9 8
GND(V-)
V+
1 2 3 4 5 6 7

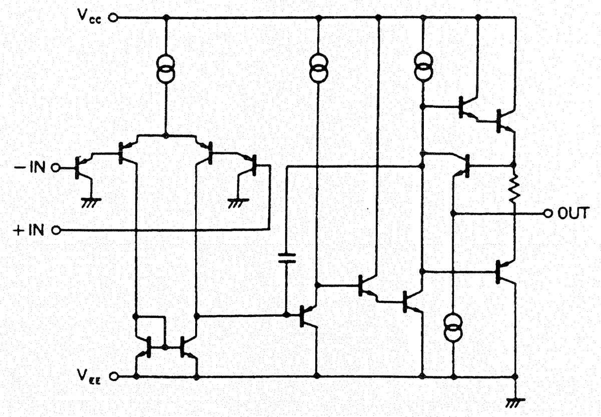
■ BA10339F 【ROHM】
(Quad Comparator)


OUT PUT2 1
OUT PUT1 2
Vcc 3
INV.INPUT1 4
NON-INV.INPUT1 5
INV.INPUT2 6
NON-INV.INPUT2 7
14 OUT PUT3
13 OUT PUT4
12 GND
11 NON-INV.INPUT4
10 INV.INPUT4
9 NON-INV.INPUT3
8 INV.INPUT3
1ch 2ch 3ch 4ch

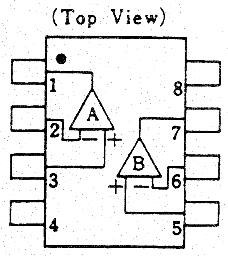

Vcc
+IN
−IN
Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8
OUT
GND

■ BA10358F 【ROHM】
(Dual Ground Sense Op.Amp.)


OUT1 1
−IN1 2
+IN1 3
VEE 4
8 Vcc
7 OUT2
6 −IN2
5 +IN2
1ch
2ch

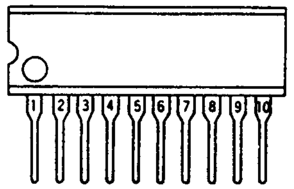

Vcc
−IN
+IN
OUT
VEE

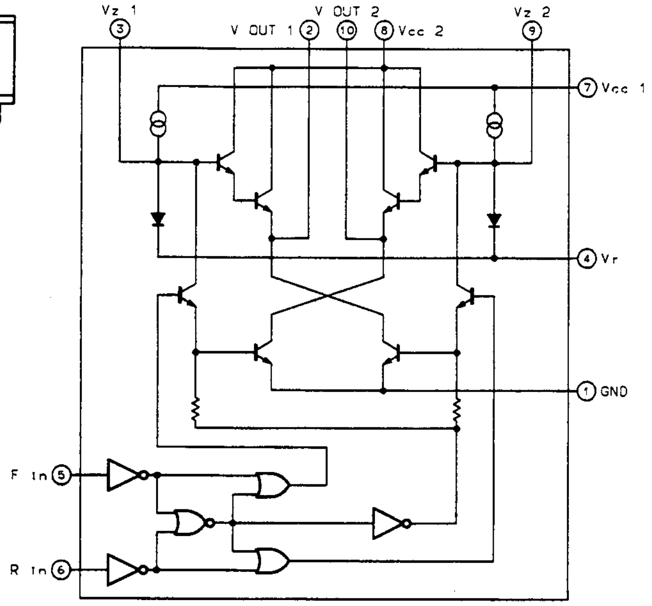
■ BA10393F 【ROHM】
(Dual Comparator)


(Top View)
1 2 3 4
8 7 6 5
A
B

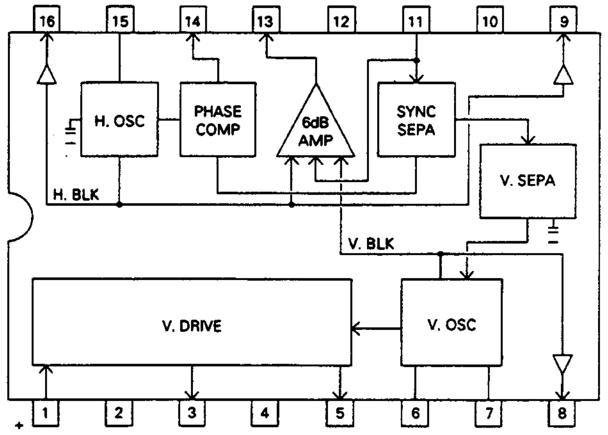
Pin
1. A OUTPUT
2. A−INPUT
3. A+INPUT
4. V^-
5. B+INPUT
6. B−INPUT
7. B OUTPUT
8. V^+

■ BA6109U2 〔ROHM〕
(Reversible Motor Driver)


BA6109
Reversible Motor Driver


Vz 1
V OUT 1
V OUT 2
Vcc 2
Vz 2
Vcc 1
Vr
GND
F in
R in
③
②
⑩
⑧
⑨
⑦
④
①
⑤
⑥

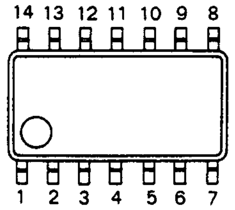
■ BA7149F 〔ROHM〕
(H and V Oscillator, Sync Separator and Vertical Driver)

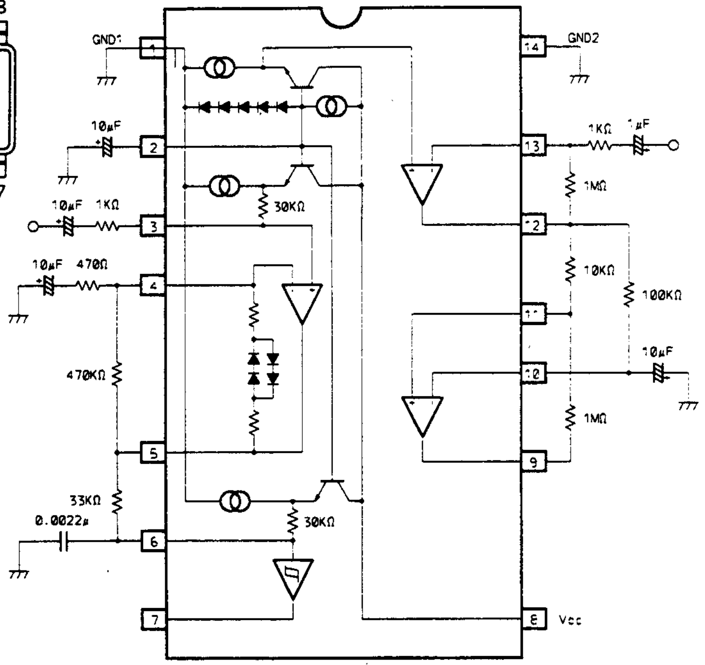

16
15
14
13
12
11
10
9
H. OSC
PHASE COMP
6dB AMP
SYNC SEPA
V. SEPA
H. BLK
V. BLK
V. DRIVE
V. OSC
1
2
3
4
5
6
7
8

[Pin function]

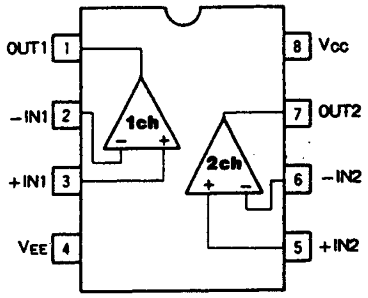
Pin No.	Function	Pin No.	Function
1	Vertical control Input	9	HD output
2	Vcc 1	10	GND
3	Vertical Deflection Drive output (RDSI)	11	Video input
4	GND	12	Vcc 2
5	Vertical deflection drive output (NEG)	13	Video output
6	Vertical Osc. terminal (Resistor)	14	Phase comparator output
7	Vertical Osc. terminal (Capacitor)	15	Horizontal Osc. terminal (Resistor)
8	VD output	16	Horizontal AFC output

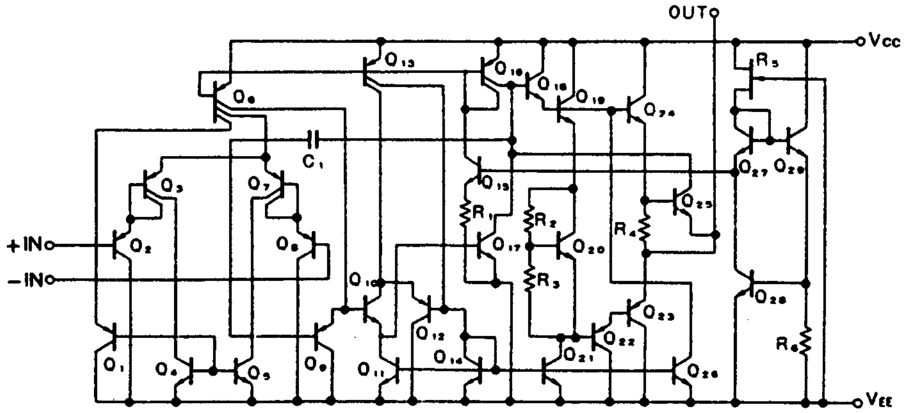
■ BA6405F 〔ROHM〕
(FG/CTL Amp.)


14 13 12 11 10 9 8
1 2 3 4 5 6 7

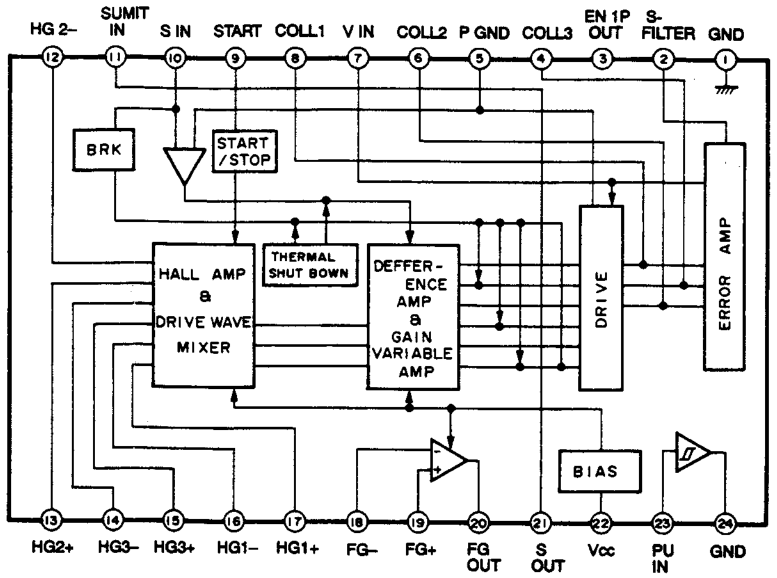

GND1
GND2
10μF
1KΩ
470Ω
470KΩ
33KΩ
0.0022μ
30KΩ
1MΩ
10KΩ
100KΩ
10μF
Vcc
1
2
3
4
5
6
7
8
9
10
11
12
13
14

■ BA728F 〔ROHM〕
(Dual Operation Amp.)

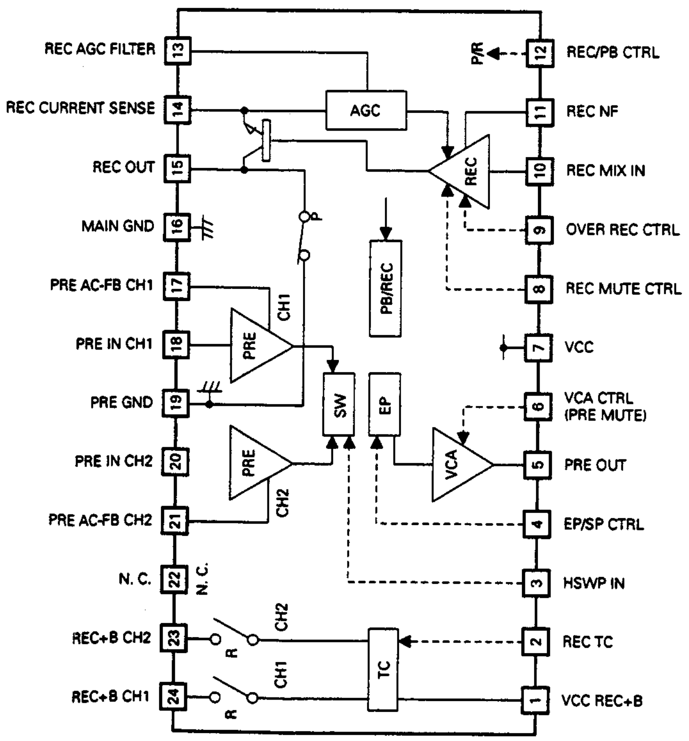

OUT1
−IN1
+IN1
VEE
Vcc
OUT2
−IN2
+IN2
1ch
2ch
1
2
3
4
8
7
6
5


OUT
Vcc
VEE
+IN
−IN
C1
R1
R2
R3
R4
R5
R6
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Q12
Q13
Q14
Q15
Q16
Q17
Q18
Q19
Q20
Q21
Q22
Q23
Q24
Q25
Q26
Q27
Q28
Q29

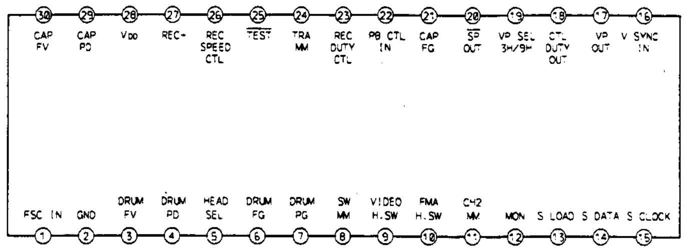
■ BA6452 〔ROHM〕
(Motor Driver Amp.)

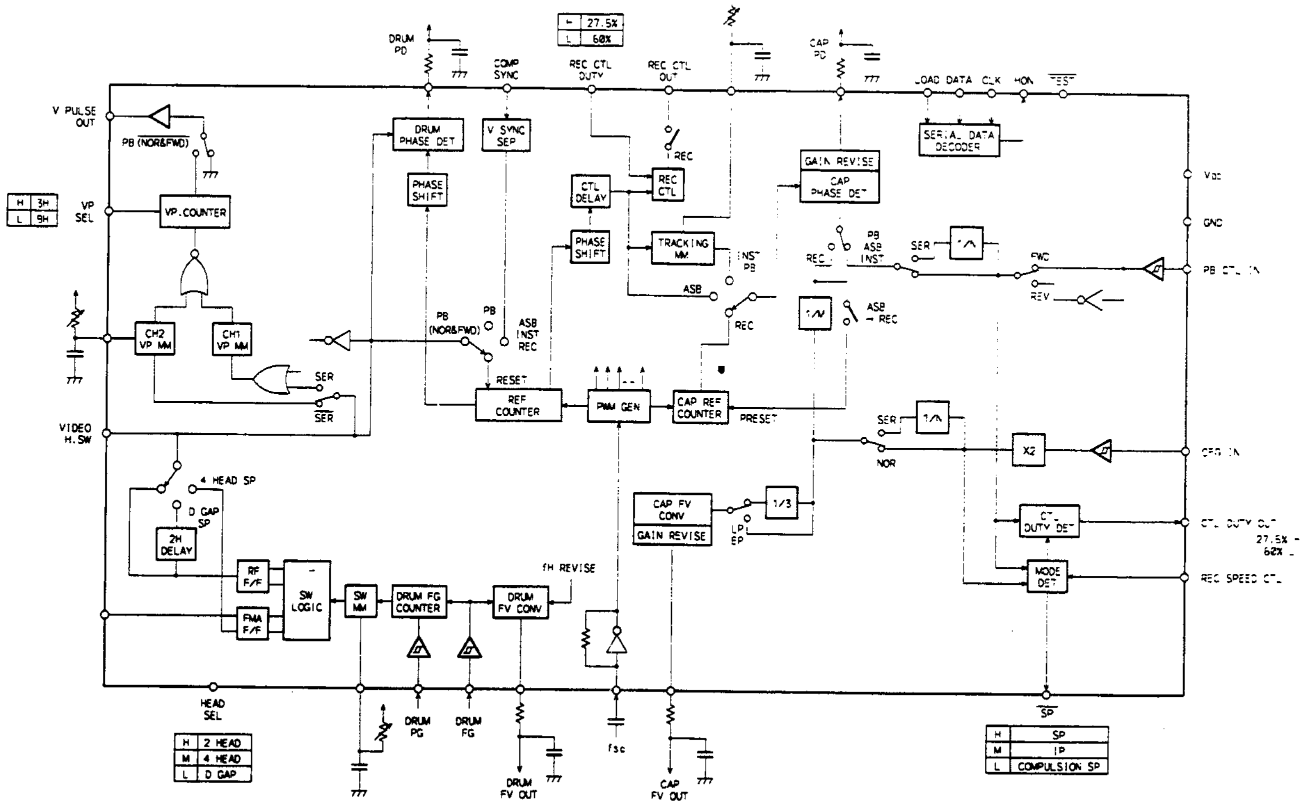

HG 2−
SUMIT IN
S IN
START
COLL1
V IN
COLL2
P GND
COLL3
EN 1P OUT
S-FILTER
GND
BRK
START /STOP
THERMAL SHUT DOWN
HALL AMP & DRIVE WAVE MIXER
DEFFER-ENCE AMP & GAIN VARIABLE AMP
DRIVE
ERROR AMP
BIAS
HG2+
HG3−
HG3+
HG1−
HG1+
FG−
FG+
FG OUT
S OUT
Vcc
PU IN
GND

■ BA7746FS 〔ROHM〕
(Head Amp.)

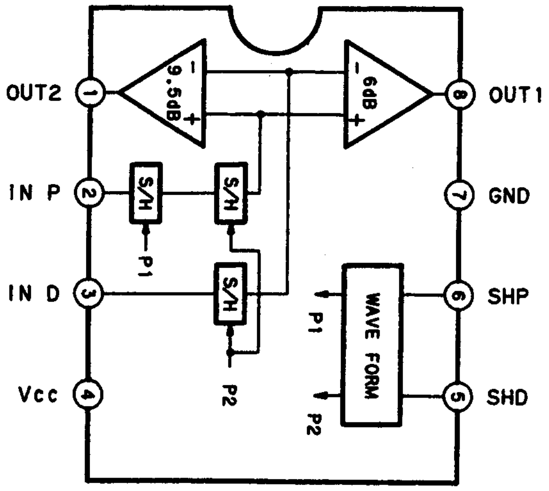

REC AGC FILTER
REC CURRENT SENSE
REC OUT
MAIN GND
PRE AC-FB CH1
PRE IN CH1
PRE GND
PRE IN CH2
PRE AC-FB CH2
N. C.
REC+B CH2
REC+B CH1
REC/PB CTRL
REC NF
REC MIX IN
OVER REC CTRL
REC MUTE CTRL
VCC
VCA CTRL (PRE MUTE)
PRE OUT
EP/SP CTRL
HSWP IN
REC TC
VCC REC+B
AGC
REC
PB/REC
PRE
CH1
CH2
SW
EP
VCA
TC
P/R
R

■ BU5753S 【ROHM】
(VTR Digital Servo Circuit)

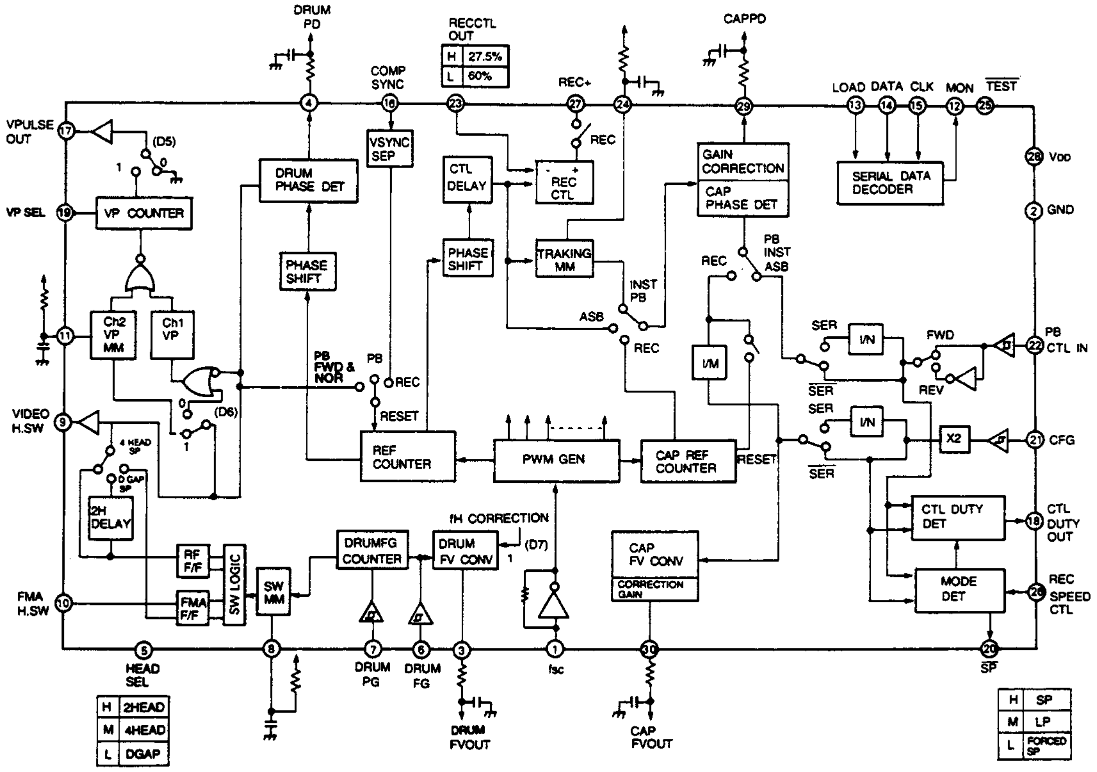

30 CAP FV
29 CAP PD
28 VDD
27 REC-
26 REC SPEED CTL
25 TEST
24 TRA MM
23 REC DUTY CTL
22 PB CTL IN
21 CAP FG
20 SP OUT
19 VP SEL 3H/9H
18 CTL DUTY OUT
17 VP OUT
16 V SYNC IN
1 FSC IN
2 GND
3 DRUM FV
4 DRUM PD
5 HEAD SEL
6 DRUM FG
7 DRUM PG
8 SW MM
9 VIDEO H.SW
10 FMA H.SW
11 CH2 MM
12 MON
13 S LOAD
14 S DATA
15 S CLOCK


DRUM PD
COMP SYNC
REC CTL DUTY
REC CTL OUT
H 27.5%
L 60%
CAP PD
LOAD DATA CLK MON TEST
V PULSE OUT
PB (NOR&FWD)
DRUM PHASE DET
V SYNC SEP
SERIAL DATA DECODER
GAIN REVISE
CAP PHASE DET
PHASE SHIFT
CTL DELAY
REC CTL
VDD
GND
H 3H
L 9H
VP SEL
VP COUNTER
TRACKING MM
INST PB
ASB
REC
SER
FWD
REV
PB CTL IN
CH2 VP MM
CH1 VP MM
PB (NOR&FWD)
INST REC
RESET
REF COUNTER
PWM GEN
CAP REF COUNTER
PRESET
VIDEO H.SW
X2
CFG IN
NOR
1/3
CAP FV CONV
GAIN REVISE
LP EP
CTL DUTY DET
CTL DUTY OUT 27.5% - 60%
4 HEAD SP
D GAP SP
2H DELAY
RF F/F
FMA F/F
SW LOGIC
SW MM
DRUM FG COUNTER
DRUM FV CONV
fH REVISE
MODE DET
REC SPEED CTL
HEAD SEL
H 2 HEAD
M 4 HEAD
L D GAP
DRUM PG
DRUM FG
fsc
DRUM FV OUT
CAP FV OUT
SP
H SP
M LP
L COMPULSION SP

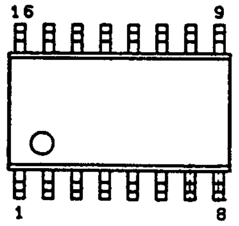
■ CXA1439M 【SONY】
(Correlated Double Sampling)

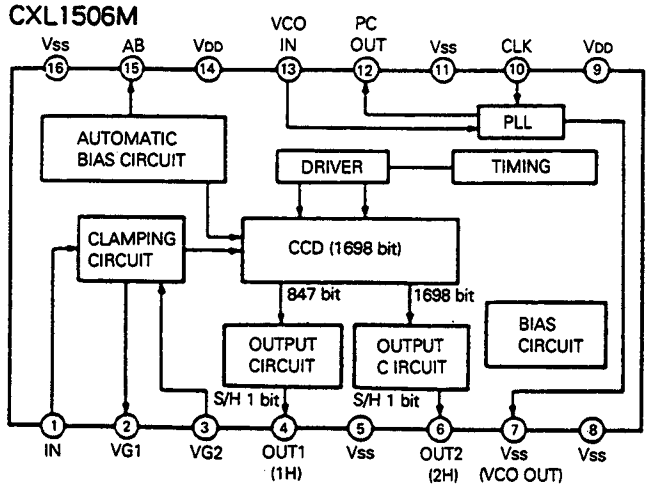

OUT2 1
IN P 2
IN D 3
Vcc 4
8 OUT1
7 GND
6 SHP
5 SHD
9.5dB
6dB
S/H
S/H
S/H
P1
P2
WAVE FORM
P1
P2

■ BU3779S 【ROHM】
(VTR Digital Servo Circuit)

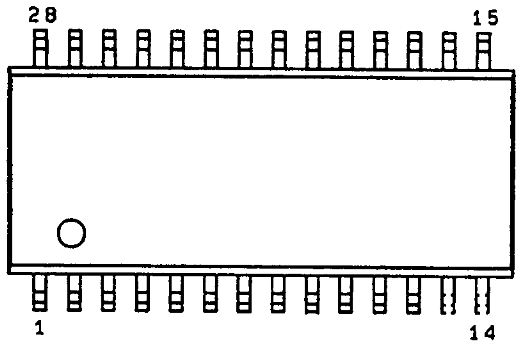

DRUM PD
RECCTL OUT
H 27.5%
L 60%
COMP SYNC
REC+
CAPPD
LOAD DATA CLK MON TEST
VPULSE OUT
(D5)
VP SEL
VP COUNTER
DRUM PHASE DET
VSYNC SEP
CTL DELAY
REC CTL
GAIN CORRECTION
CAP PHASE DET
SERIAL DATA DECODER
VDD
GND
PHASE SHIFT
PHASE SHIFT
TRAKING MM
INST PB
ASB
REC
PB INST ASB
Ch2 VP MM
Ch1 VP
SER
I/N
FWD
PB CTL IN
VIDEO H.SW
PB FWD & NOR
PB REC
(D6)
RESET
REF COUNTER
PWM GEN
CAP REF COUNTER
RESET
V/M
REV
X2
CFG
4 HEAD SP
D GAP SP
2H DELAY
fH CORRECTION
DRUMFG COUNTER
DRUM FV CONV
(D7)
CAP FV CONV
CORRECTION GAIN
CTL DUTY DET
CTL DUTY OUT
MODE DET
REC SPEED CTL
FMA H.SW
RF F/F
FMA F/F
SW LOGIC
SW MM
HEAD SEL
H 2HEAD
M 4HEAD
L DGAP
DRUM PG
DRUM FG
DRUM FVOUT
fsc
CAP FVOUT
SP
H SP
M LP
L FORCED SP

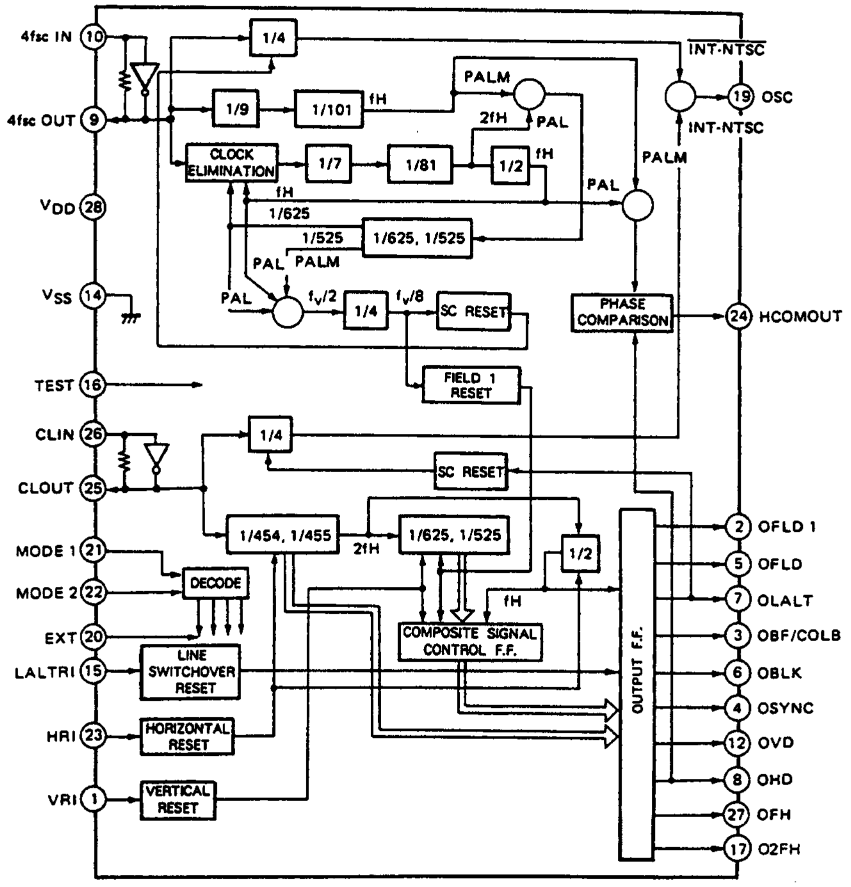
■ CXL1506M 【SONY】
(CMOS CCD 1H/2H Delay Line)




CXL1506M
16 Vss
15 AB
14 VDD
13 VCO IN
12 PC OUT
11 Vss
10 CLK
9 VDD
AUTOMATIC BIAS CIRCUIT
PLL
DRIVER
TIMING
CLAMPING CIRCUIT
CCD (1698 bit)
847 bit
1698 bit
OUTPUT CIRCUIT
OUTPUT CIRCUIT
BIAS CIRCUIT
S/H 1 bit
S/H 1 bit
1 IN
2 VG1
3 VG2
4 OUT1 (1H)
5 Vss
6 OUT2 (2H)
7 Vss (VCO OUT)
8 Vss

■ CXD1217M 〔SONY〕
(Synchronizing Signal Generator for Video Camera)





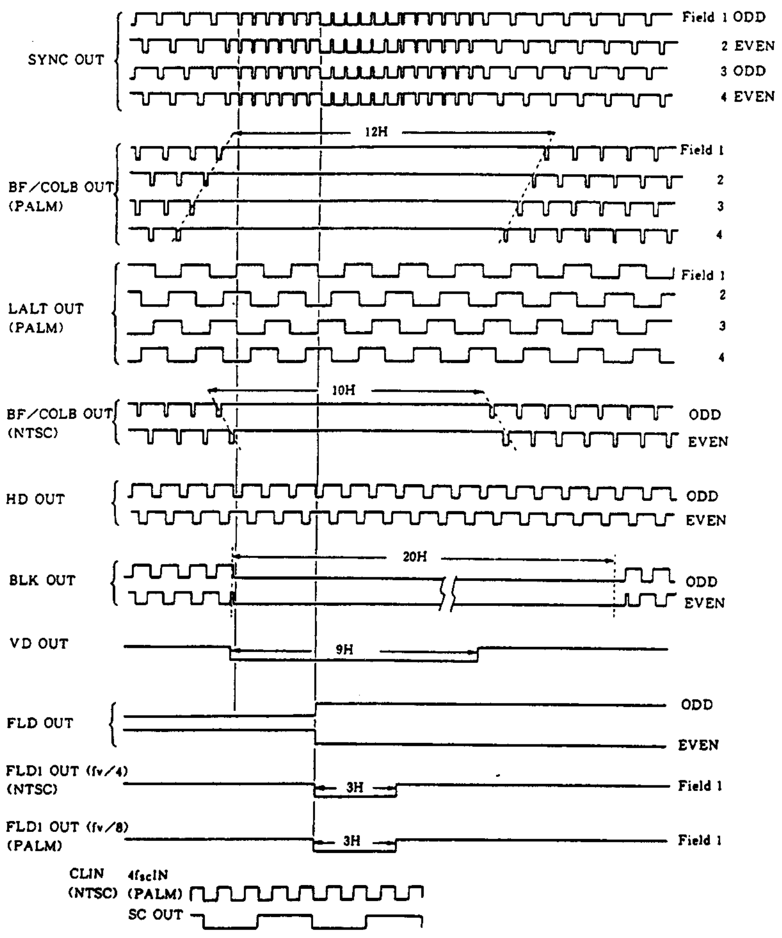
4fsc IN 10
4fsc OUT 9
VDD 28
VSS 14
TEST 16
CLIN 26
CLOUT 25
MODE 1 21
MODE 2 22
EXT 20
LALTRI 15
HRI 23
VRI 1
1/4
1/9
1/101
fH
PALM
2fH
PAL
CLOCK ELIMINATION
1/7
1/81
1/2
fH
PALM
PAL
fH
1/625
1/525
1/625, 1/525
PAL PALM
PAL
fV/2
1/4
fV/8
SC RESET
PHASE COMPARISON
INT·NTSC
19 OSC
INT·NTSC
24 HCOMOUT
FIELD 1 RESET
1/4
SC RESET
1/454, 1/455
2fH
1/625, 1/525
1/2
DECODE
fH
COMPOSITE SIGNAL CONTROL F.F.
LINE SWITCHOVER RESET
HORIZONTAL RESET
VERTICAL RESET
OUTPUT F.F.
2 OFLD 1
5 OFLD
7 OLALT
3 OBF/COLB
6 OBLK
4 OSYNC
12 OVD
8 OHD
27 OFH
17 O2FH

Note : Pin 19 output is (a) a signal based on Pin 26 in INT mode at NTSC.
(b) each signal is based on Pin 10 in other modes.

Timing Chart

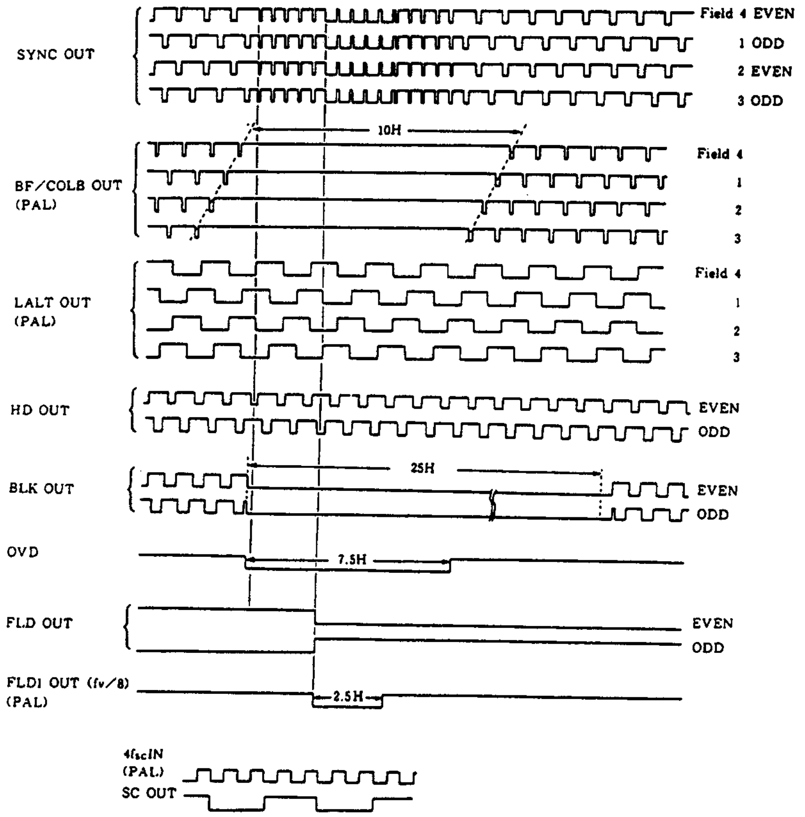
Output Timing Chart Diagram

CXD1217 NTSC, PALM

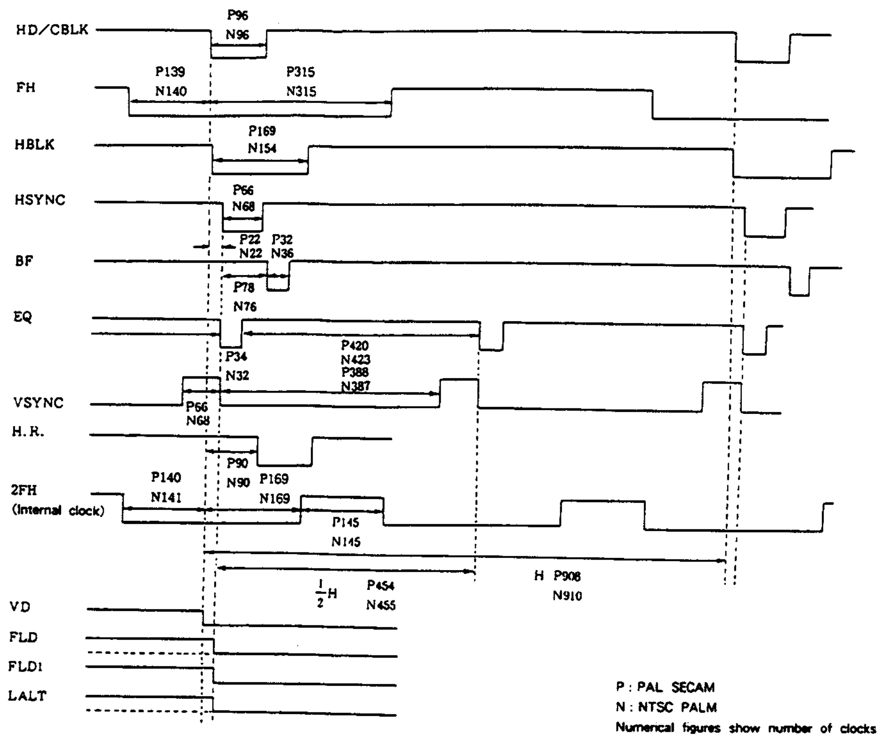


SYNC OUT
Field 1 ODD
2 EVEN
3 ODD
4 EVEN
12H
BF/COLB OUT (PALM)
Field 1
2
3
4
LALT OUT (PALM)
Field 1
2
3
4
10H
BF/COLB OUT (NTSC)
ODD
EVEN
HD OUT
ODD
EVEN
20H
BLK OUT
ODD
EVEN
VD OUT
9H
FLD OUT
ODD
EVEN
FLDI OUT (fV/4) (NTSC)
3H
Field 1
FLDI OUT (fV/8) (PALM)
3H
Field 1
CLIN 4fscIN (NTSC) (PALM)
SC OUT

CXD1217 PAL



SYNC OUT
Field 4 EVEN
1 ODD
2 EVEN
3 ODD
10H
BF/COLB OUT (PAL)
Field 4
1
2
3
LALT OUT (PAL)
Field 4
1
2
3
HD OUT
EVEN
ODD
25H
BLK OUT
EVEN
ODD
OVD
7.5H
FLD OUT
EVEN
ODD
FLDI OUT (fV/8) (PAL)
2.5H
4fscIN (PAL)
SC OUT

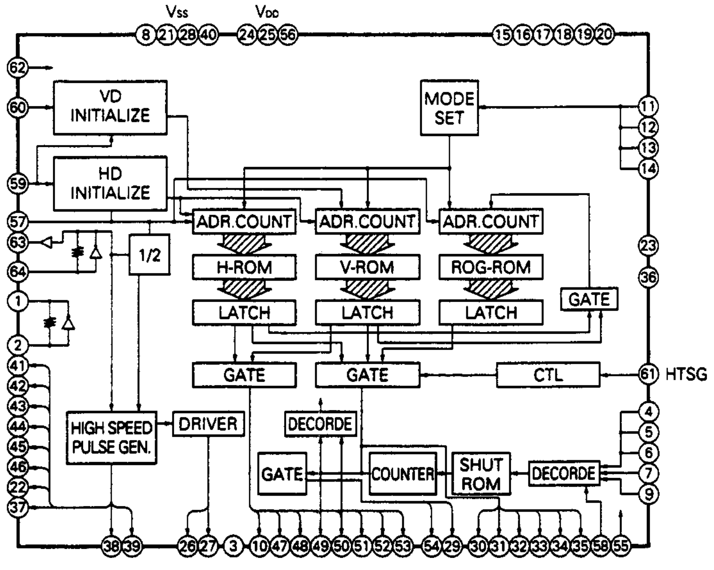


HD/CBLK
P96
N96
FH
P139
N140
P315
N315
HBLK
P169
N154
HSYNC
P66
N68
BF
P22
N22
P32
N36
P78
N76
EQ
P34
N32
P420
N423
P388
N387
VSYNC
P66
N68
H.R.
P90
N90
2FH (Internal clock)
P140
N141
P169
N169
P145
N145
1/2 H
P454
N455
H P908
N910
VD
FLD
FLDI
LALT
P : PAL SECAM
N : NTSC PALM
Numerical figures show number of clocks

Pin Description

Pin No.	Symbol	I/O	Description
1	VRI	I	Vertical reset signal
2	OFLD1	O	First field output
3	OBF/COLB	O	Burst flag/color blanking output
4	OSYNC	O	Composite sync output
5	OFLD	O	Even and Odd output
6	OBLK	O	Composite blanking output
7	OLALT	O	Line alternate output
8	OHD	O	Horizontal drive output
9	4fscOUT	O	4fsc output
10	4fscIN	I	4fsc input
11	NC	—	
12	OVD	O	Vertical drive output
13	NC	—	
14	Vss	—	GND pin
15	LALTRI	I	Line alternate reset input
16	TEST	I	Test input
17	O2FH	O	$2f_H$ output (Double the frequency of Pin 27)
18	NC	—	
19	OSC	O	Sub carrier output
20	EXT	I	Internal and external synchronizing modes switchover L : Internal synchronization H : External synchronization
21	MODE1	I	System selecting input 1
22	MODE2	I	System selecting input 2
23	HRI	I	Horizontal reset input
24	HCOMOUT	O	Phase comparator output
25	CLOUT	O	Clock output
26	CLIN	I	Clock input
27	OFH	O	Horizontal frequency output
28	V_{DD}	—	Power supply pin

■ CXD1257AR 【SONY】
(Timing Generator)

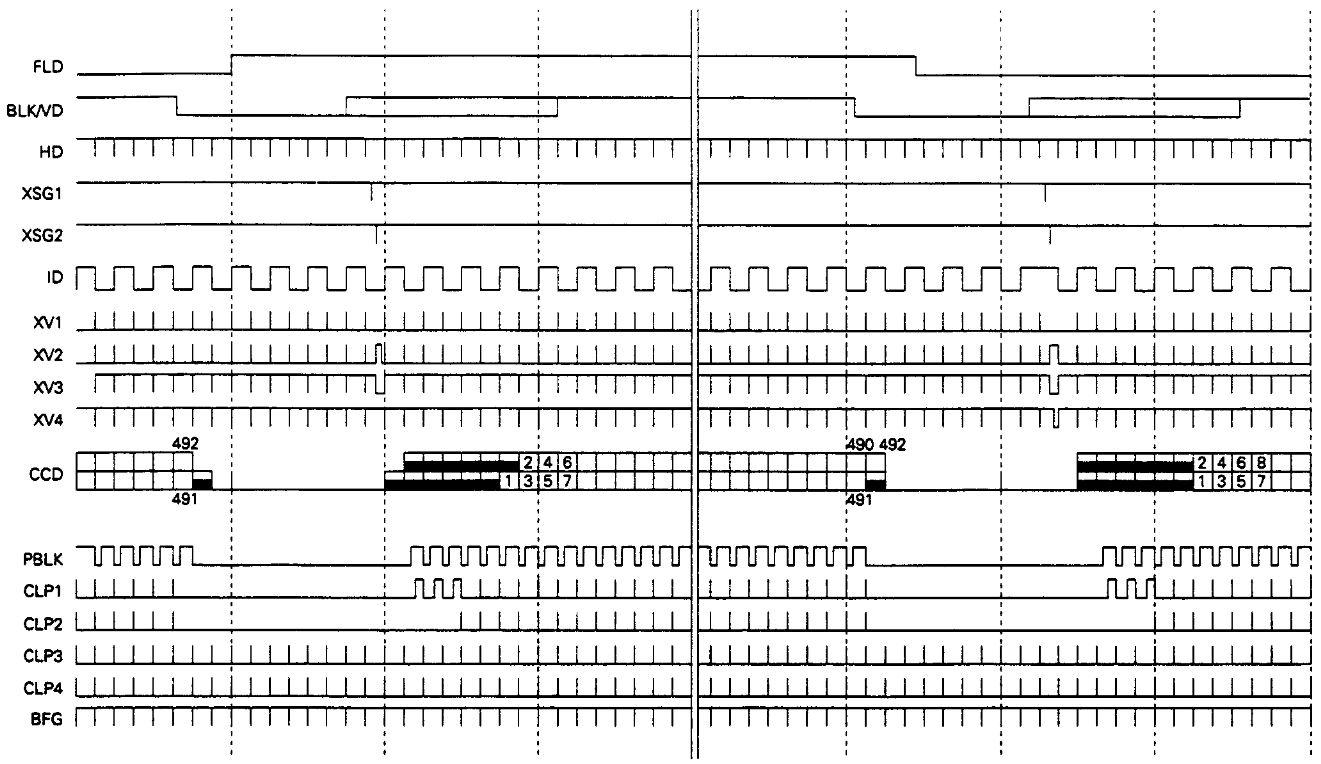

Vss
VDD
8 21 28 40
24 25 56
15 16 17 18 19 20
62
60
59
57
63
64
1
2
41
42
43
44
45
46
22
37
VD INITIALIZE
HD INITIALIZE
MODE SET
11
12
13
14
23
36
1/2
ADR.COUNT
ADR.COUNT
ADR.COUNT
H-ROM
V-ROM
ROG-ROM
LATCH
LATCH
LATCH
GATE
GATE
GATE
CTL
61 HTSG
HIGH SPEED PULSE GEN.
DRIVER
DECORDE
GATE
COUNTER
SHUT ROM
DECORDE
4
5
6
7
9
38 39 26 27 3 10 47 48 49 50 51 52 53 54 29 30 31 32 33 34 35 58 55

IC BLOCK(SONY CXD1257AR)

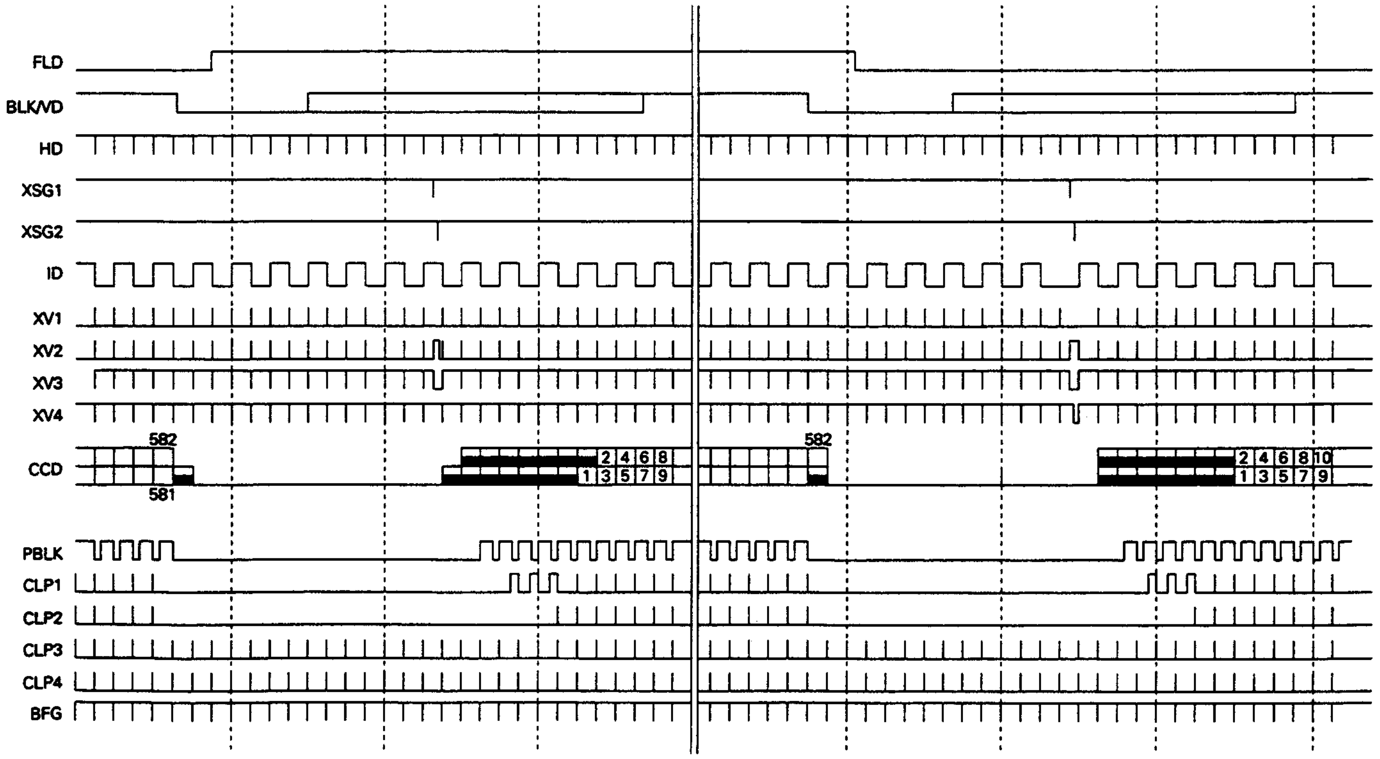
Pin No.	Symbol	I/O	Description
1	OSCO	O	Oscillating inverter output
2	OSCI	I	Oscillating inverter input
3	EF	I	NC(Pull-up resistor)
4	ED0	I	Shutter speed control (Pull-up resistor) (Details will be mentioned later.)
5	ED1	I	
6	ED2	I	
7	SMD1	I	Shutter mode setting (Pull-up resistor) (Details will be mentioned later.)
8	Vss	—	GND
9	SMD2	I	Shutter mode setting (Pull-up resistor) (Details will be mentioned later.)
10	XVCT	O	NC(OPEN)
11	D1	I	Data inputwhen external ROM is used When external ROM is not used(Pull-down resistor) "L"in usual
12	D2	I	"L"in usual
13	D3	I	"L"in usual
14	D4	I	L:NTSC H:PAL
15	A5	O	NC(OPEN)
16	A4	O	
17	A3	O	
18	A0	O	
19	A1	O	
20	A2	O	
21	Vss	—	GND
22	RG	O	Reset gate pulse output
23	NC	—	
24	VDD	—	Power supply
25	VDD	—	Power supply(for H1,H2)
26	H1	O	Clock pulse output to drive horizontal registers of CCD
27	H2	O	Clock pulse output to drive horizontal registers of CCD
28	Vss	—	GND(for H1,H2)
29	XSUB	O	CCD charge drain pulse output
30	XV2	O	Clock pulse output to drive vertical registers of CCD
31	XV1	O	Clock pulse output to drive vertical registers of CCD
32	XSG1	O	CCD sensor charge read-out pulse output
33	XV3	O	Clock pulse output to drive vertical registers of CCD
34	XSG2	O	CCD sensor charge read-out pulse output
35	XV4	O	Clock pulse output to drive vertical registers of CCD
36	TEST2	I	Test terminal "L" in usual
37	MCK	O	NTSC:1820fH/3 PAL:1816fH/3 output
38	XSHP	O	Precharge level sample holding pulse
39	XSHD	O	Data sample holding pulse
40	Vss	—	GND
41	XSP1	O	Color separation sample holding pulse
42	XSP2	O	Color separation sample holding pulse
43	XSH1	O	Switching sample holding pulse

Pin No.	Symbol	I/O	Description
44	XSH2	O	Switching sample holding pulse
45	XDL1	O	Delay line clock
46	XDL2	O	Delay line clock
47	BFG	O	Pulse for encoder,chroma modulator
48	CLP1	O	Clamping pulse output
49	CLP2	O	
50	CLP3	O	
51	CLP4	O	
52	PBLK	O	Blanking cleaning pulse
53	ID	O	Line discrimination output
54	WEN	O	Write enable (at low shutter speed only) (Details will be mentioned later.)
55	GM	I	L:Analog signal process , H:Digital signal process(Pull-up resistor)
56	VDD	—	Power supply
57	CL	O	NTSC:910fH , PAL:908fH clock output
58	PS	I	Electronic shutter speed data input L:Serial input H:Palallel input (Pull-up resistor)
59	HD	I	Horizontal sync signal input
60	VD	I	Vertical sync signal input
61	HTSG	I	XSG1,XSG2 control pulse L:XSG1 , 2 stop H:XSG1 , 2 operating (Pull-up resistor)
62	TEST1	I	Test terminal. "L" in usual (Pull-up resistor)
63	XCK	O	NTSC:1820fH , PAL:1816fH clock output
64	CK	I	NTSC:1820fH , PAL:1816fH clock input

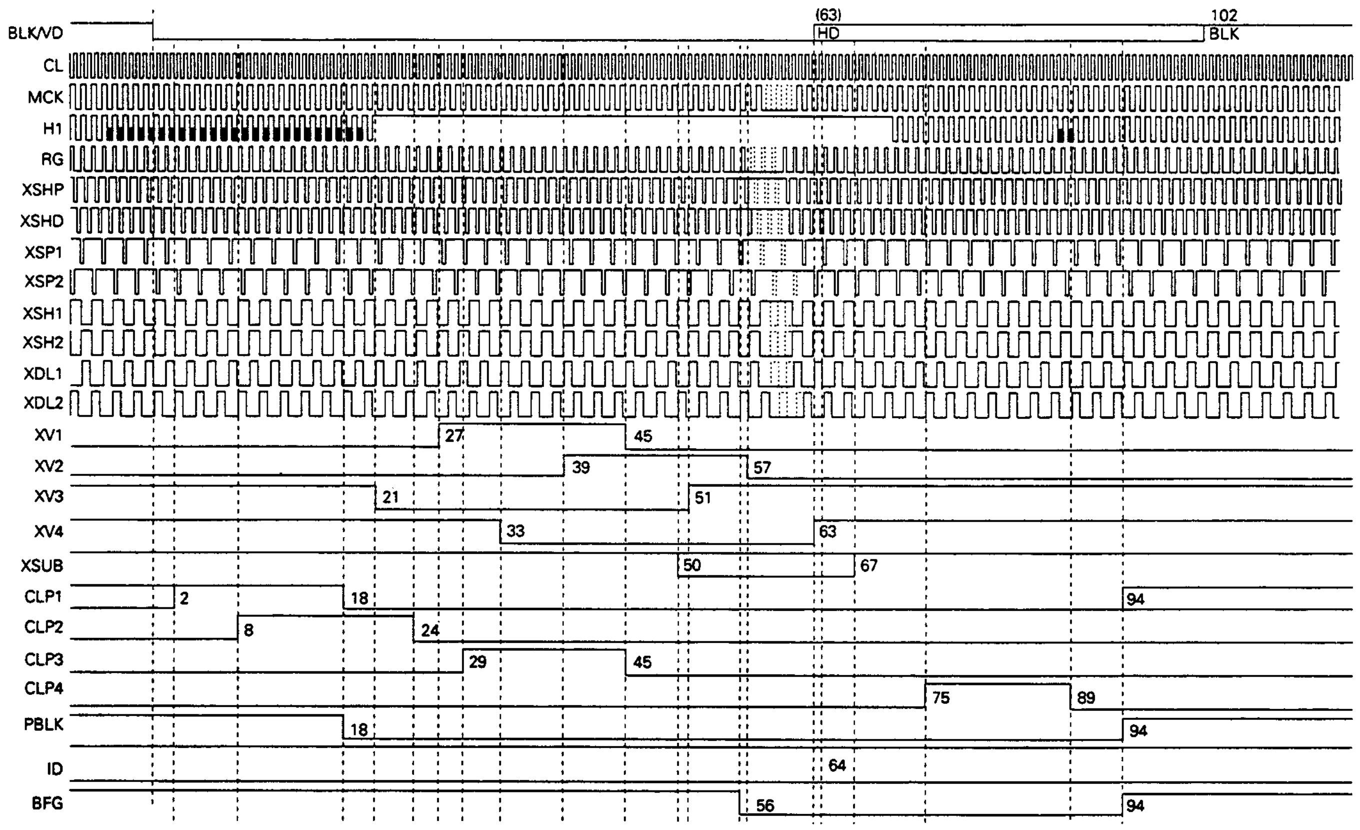
Time Chart (1) [NTSC Vertical Direction]


FLD
BLK/VD
HD
XSG1
XSG2
ID
XV1
XV2
XV3
XV4
CCD
492
491
2 4 6
1 3 5 7
490 492
491
2 4 6 8
1 3 5 7
PBLK
CLP1
CLP2
CLP3
CLP4
BFG

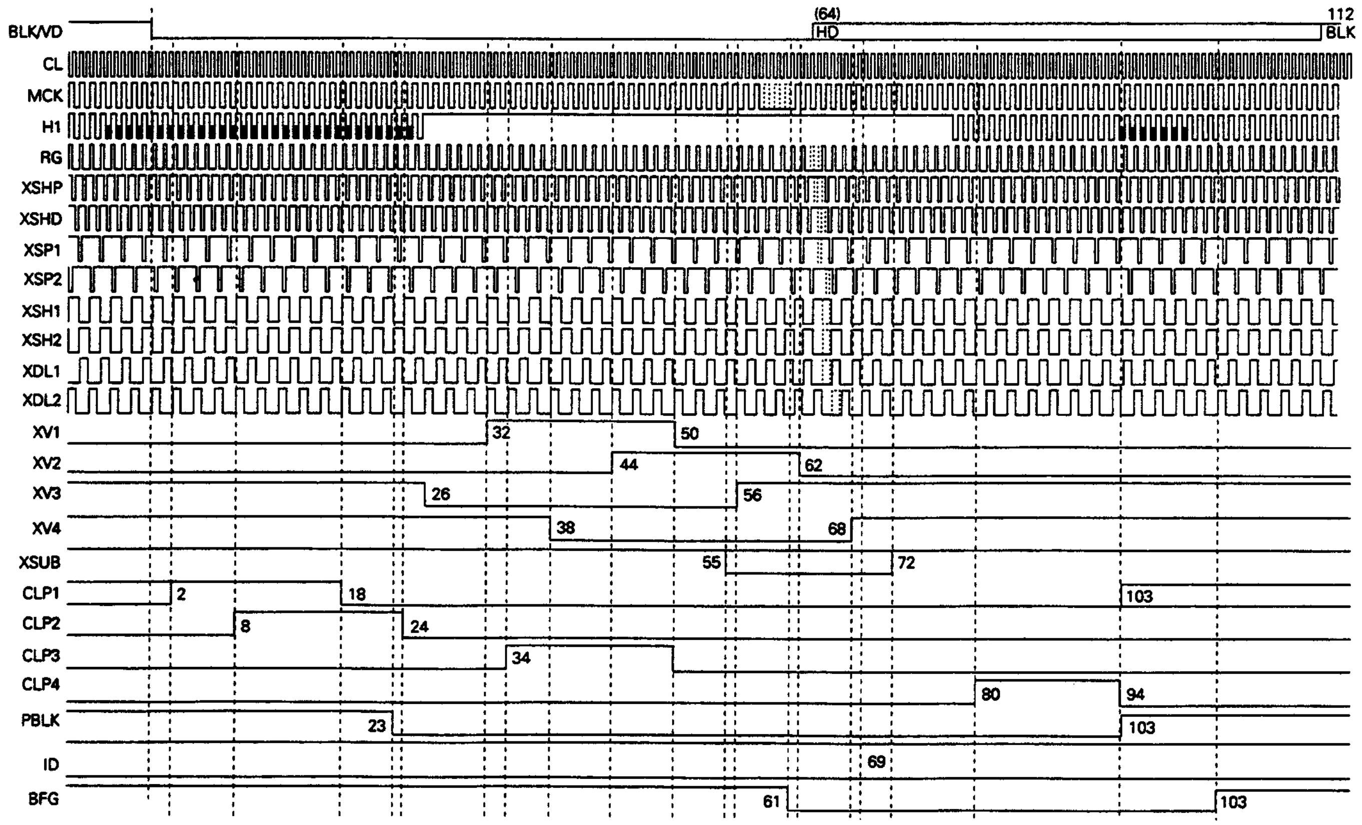
Time Chart (2) [PAL Vertical Direction]


FLD
BLK/VD
HD
XSG1
XSG2
ID
XV1
XV2
XV3
XV4
CCD
582
581
2 4 6 8
1 3 5 7 9
582
2 4 6 8 10
1 3 5 7 9
PBLK
CLP1
CLP2
CLP3
CLP4
BFG

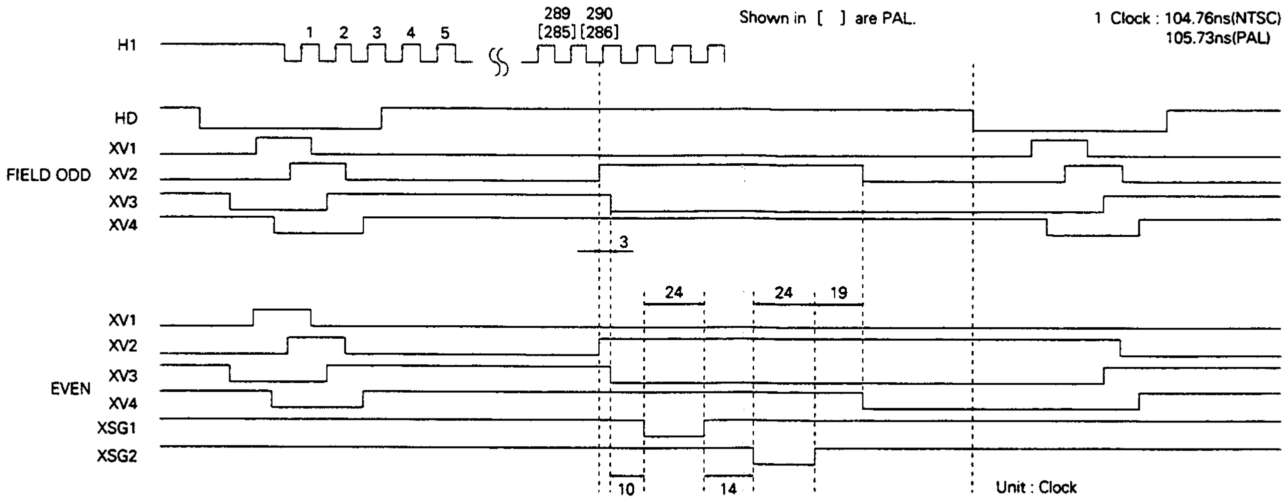
Time Chart (3) [NTSC Horizontal Direction]


BLK/VD
CL
MCK
H1
RG
XSHP
XSHD
XSP1
XSP2
XSH1
XSH2
XDL1
XDL2
XV1
XV2
XV3
XV4
XSUB
CLP1
CLP2
CLP3
CLP4
PBLK
ID
BFG
(63)
HD
102
BLK
27
45
39
57
21
51
33
63
50
67
2
18
94
8
24
29
45
75
89
18
94
64
56
94

Time Chart (4) [PAL Horizontal Direction]


BLK/VD
CL
MCK
H1
RG
XSHP
XSHD
XSP1
XSP2
XSH1
XSH2
XDL1
XDL2
XV1
XV2
XV3
XV4
XSUB
CLP1
CLP2
CLP3
CLP4
PBLK
ID
BFG
(64)
HD
112
BLK
32
50
44
62
26
56
38
68
55
72
2
18
103
8
24
34
80
94
23
103
69
61
103

Time Chart (5) [XV1-XV4 Modulate]

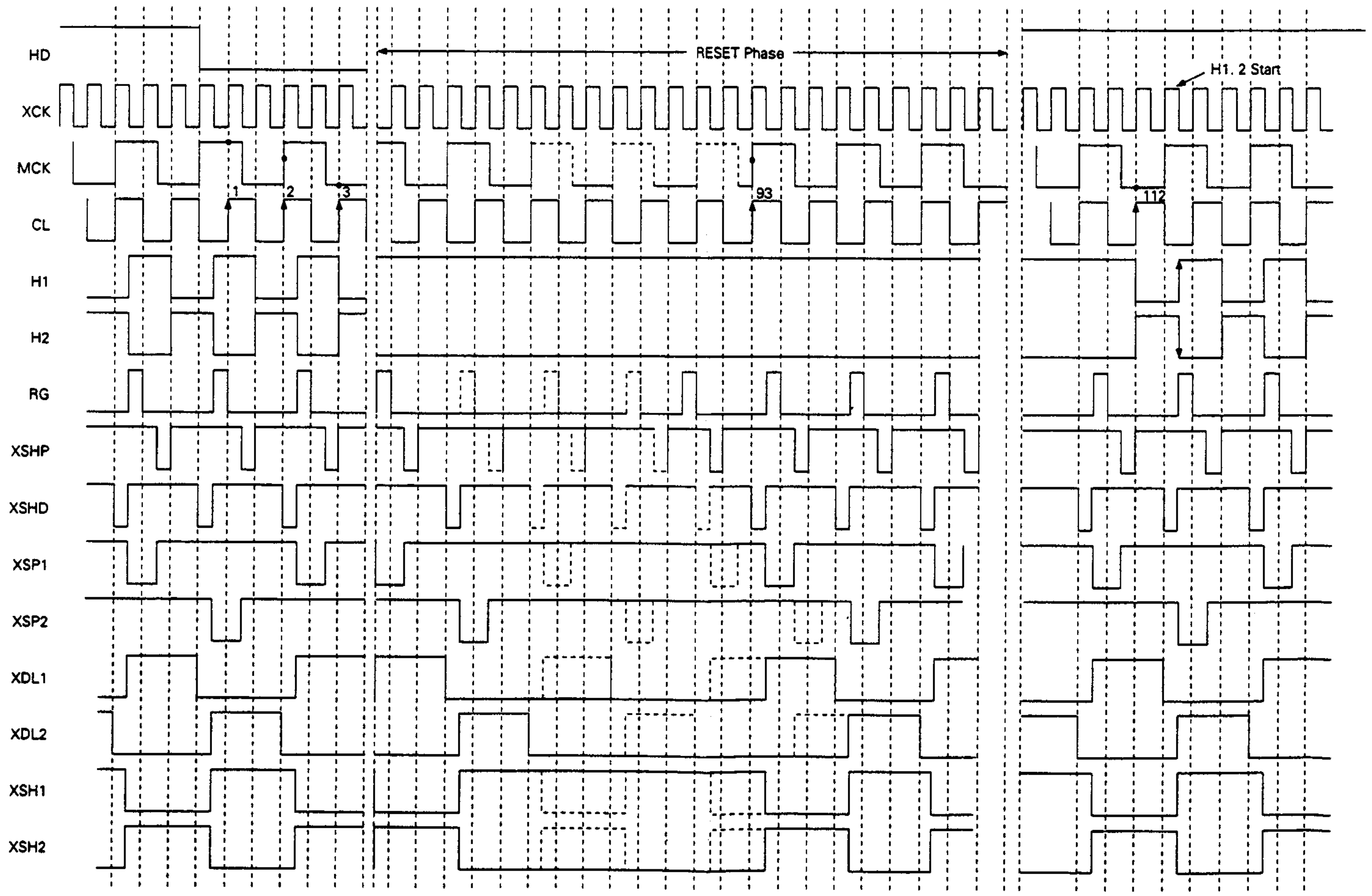

H1
1 2 3 4 5
289 290
[285] [286]
HD
FIELD ODD
XV1
XV2
XV3
XV4
3
24
24
19
EVEN
XV1
XV2
XV3
XV4
XSG1
XSG2
10
14

Shown in [ ] are PAL.

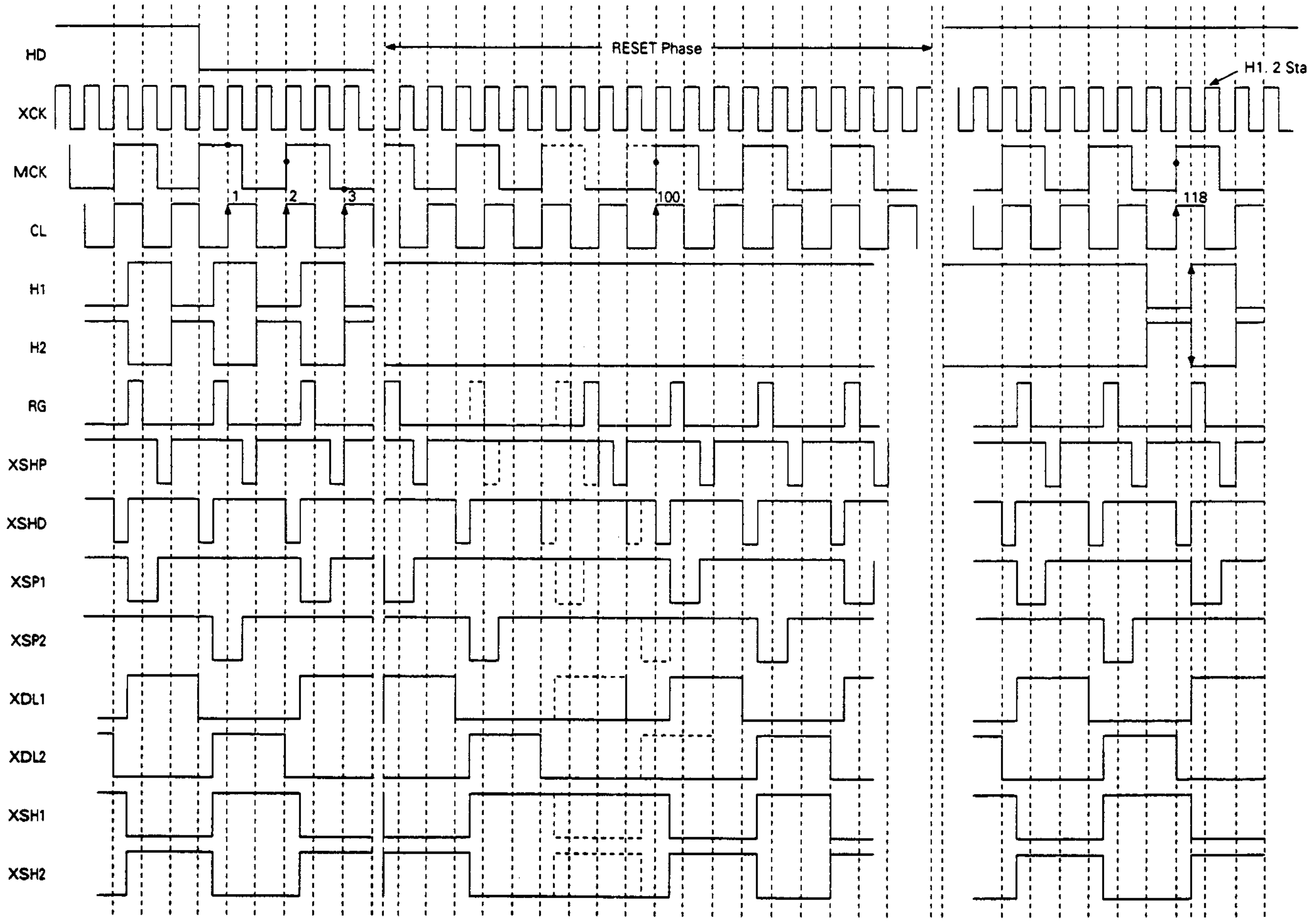
1 Clock : 104.76ns(NTSC)
105.73ns(PAL)

Unit : Clock

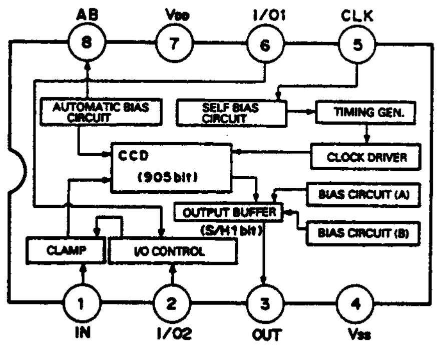
Time Chart (6) High Speed Phase [NTSC]


HD
XCK
MCK
CL
H1
H2
RG
XSHP
XSHD
XSP1
XSP2
XDL1
XDL2
XSH1
XSH2
RESET Phase
H1, 2 Start
1
2
3
93
112

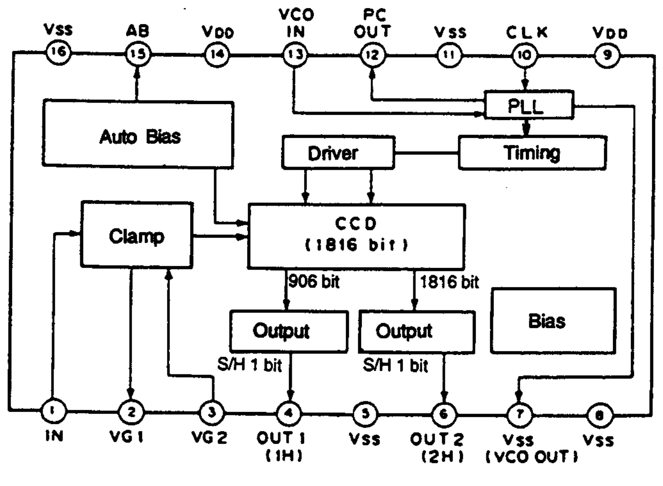
Time Chart (7) High Speed Phase [PAL]


HD
XCK
MCK
CL
H1
H2
RG
XSHP
XSHD
XSP1
XSP2
XDL1
XDL2
XSH1
XSH2
RESET Phase
H1. 2 Start
1
2
3
100
118

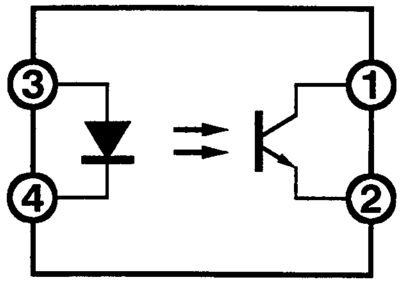
■ CXL5504M 〔SONY〕
(CMOS-CCD 1H Delayline For NTSC)


AB
VDD
I/O1
CLK
8
7
6
5
AUTOMATIC BIAS CIRCUIT
SELF BIAS CIRCUIT
TIMING GEN.
CCD (905bit)
CLOCK DRIVER
BIAS CIRCUIT (A)
OUTPUT BUFFER (S/H1 bit)
BIAS CIRCUIT (B)
CLAMP
I/O CONTROL
1
2
3
4
IN
I/O2
OUT
Vss

■ CXL5509M 〔SONY〕
(NTSC CMOS-CCD 1H/2H Delay Line)

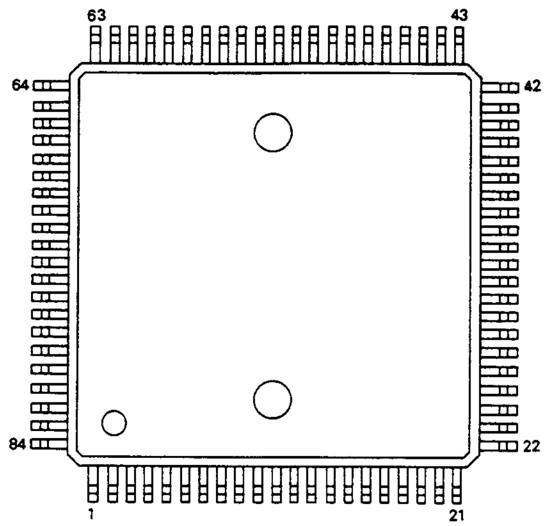

VSS
AB
VDD
VCO IN
PC OUT
VSS
CLK
VDD
16
15
14
13
12
11
10
9
Auto Bias
PLL
Driver
Timing
Clamp
CCD (1816 bit)
906 bit
1816 bit
Output
Output
S/H 1 bit
S/H 1 bit
Bias
1
2
3
4
5
6
7
8
IN
VG1
VG2
OUT1 (1H)
VSS
OUT2 (2H)
VSS (VCO OUT)
VSS

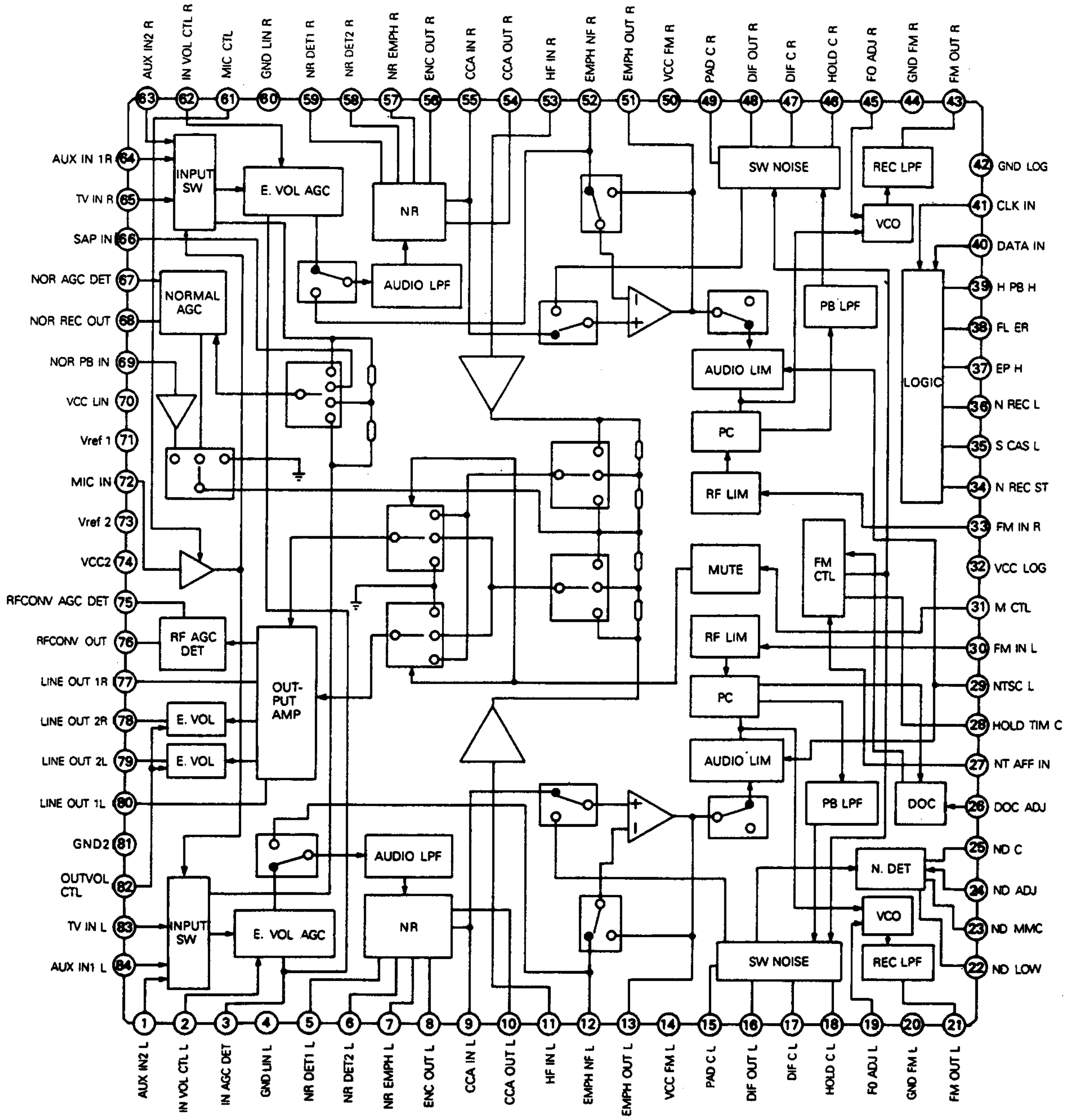
■ GP2L09BC 〔SHARP〕
(Photo Sensor)



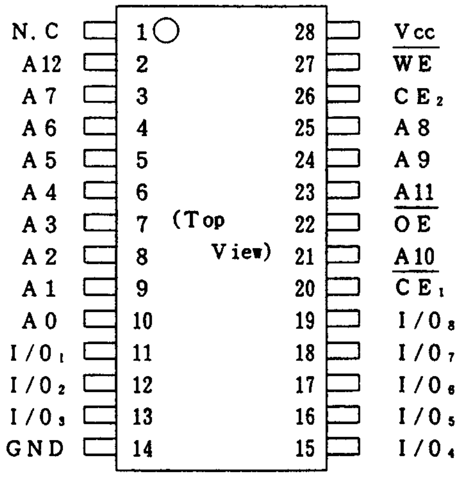
Pin No.	Discription
1	Collector
2	Emitter
3	Anode
4	Cathode

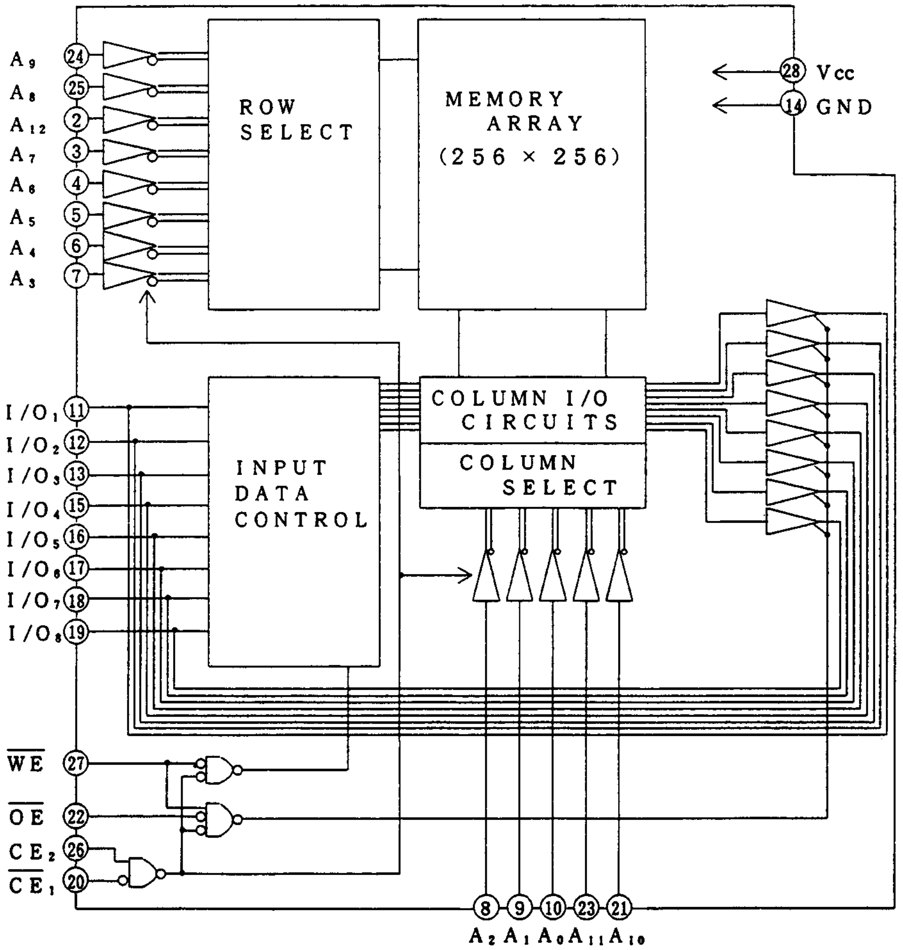
■ JCP0038 〔JVC〕
(FMA Signal Processor)


63
43
64
42
84
22
1
21


AUX IN2 R
IN VOL CTL R
MIC CTL
GND LIN R
NR DET1 R
NR DET2 R
NR EMPH R
ENC OUT R
CCA IN R
CCA OUT R
HF IN R
EMPH NF R
EMPH OUT R
VCC FM R
PAD C R
DIF OUT R
DIF C R
HOLD C R
FO ADJ R
GND FM R
FM OUT R
AUX IN 1R 64
TV IN R 65
SAP IN 66
NOR AGC DET 67
NOR REC OUT 68
NOR PB IN 69
VCC LIN 70
Vref 1 71
MIC IN 72
Vref 2 73
VCC2 74
RFCONV AGC DET 75
RFCONV OUT 76
LINE OUT 1R 77
LINE OUT 2R 78
LINE OUT 2L 79
LINE OUT 1L 80
GND2 81
OUTVOL CTL 82
TV IN L 83
AUX IN1 L 84
42 GND LOG
41 CLK IN
40 DATA IN
39 H PB H
38 FL ER
37 EP H
36 N REC L
35 S CAS L
34 N REC ST
33 FM IN R
32 VCC LOG
31 M CTL
30 FM IN L
29 NTSC L
28 HOLD TIM C
27 NT AFF IN
26 DOC ADJ
25 ND C
24 ND ADJ
23 ND MMC
22 ND LOW
INPUT SW
E. VOL AGC
NR
AUDIO LPF
NORMAL AGC
SW NOISE
REC LPF
VCO
PB LPF
AUDIO LIM
PC
RF LIM
LOGIC
MUTE
FM CTL
RF AGC DET
OUT-PUT AMP
E. VOL
E. VOL
DOC
N. DET
AUX IN2 L
IN VOL CTL L
IN AGC DET
GND LIN L
NR DET1 L
NR DET2 L
NR EMPH L
ENC OUT L
CCA IN L
CCA OUT L
HF IN L
EMPH NF L
EMPH OUT L
VCC FM L
PAD C L
DIF OUT L
DIF C L
HOLD C L
FO ADJ L
GND FM L
FM OUT L

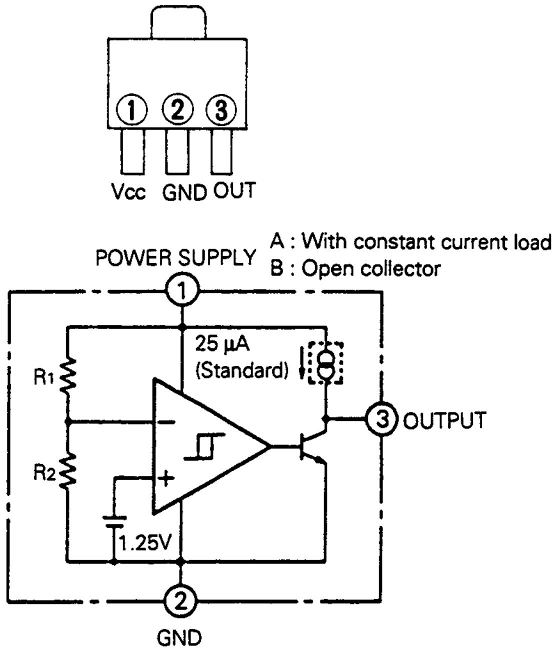
■ LH5168N-10L 【SHARP】
(64K SRAM)


N.C 1
A12 2
A7 3
A6 4
A5 5
A4 6
A3 7
A2 8
A1 9
A0 10
I/O1 11
I/O2 12
I/O3 13
GND 14
(Top View)
28 Vcc
27 WE
26 CE2
25 A8
24 A9
23 A11
22 OE
21 A10
20 CE1
19 I/O8
18 I/O7
17 I/O6
16 I/O5
15 I/O4

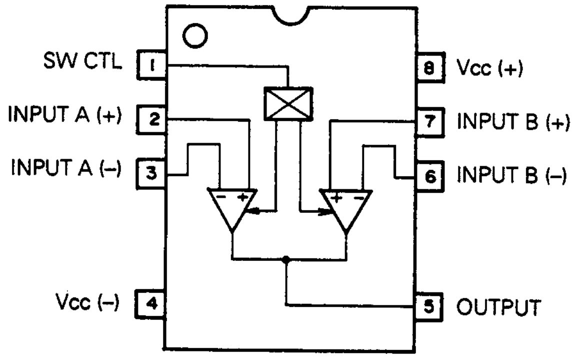

ROW SELECT
MEMORY ARRAY (256 × 256)
Vcc
GND
INPUT DATA CONTROL
COLUMN I/O CIRCUITS
COLUMN SELECT
A9 A8 A12 A7 A6 A5 A4 A3
I/O1 I/O2 I/O3 I/O4 I/O5 I/O6 I/O7 I/O8
WE
OE
CE2
CE1
A2 A1 A0 A11 A10

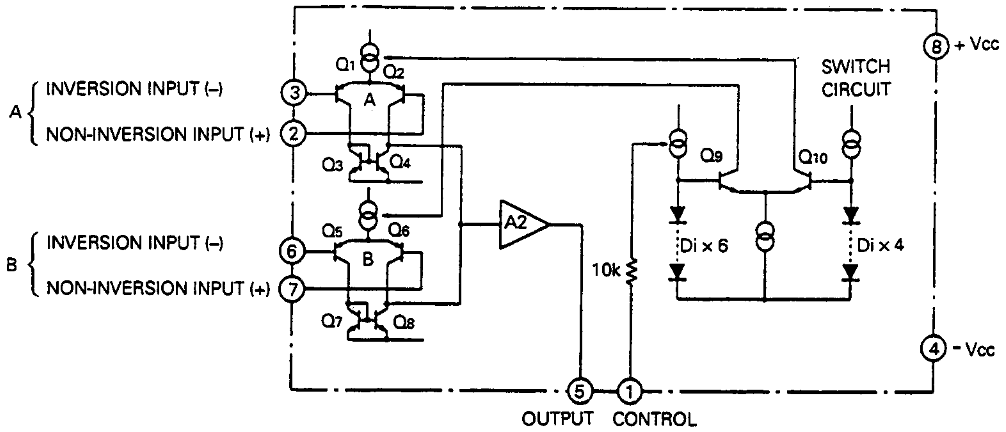
Name	Signal
$A_0 \sim A_{12}$	Address Input
$\overline{CE_1}$/CE_2	Chip Enable
$\overline{WE}$	Write Enable
$\overline{OE}$	OUTPUT
$I/O_1 \sim I/O_8$	Data I/O
N. C.	Non Connection

■ M51944BML 【MITSUBISHI】
(System Reset IC)

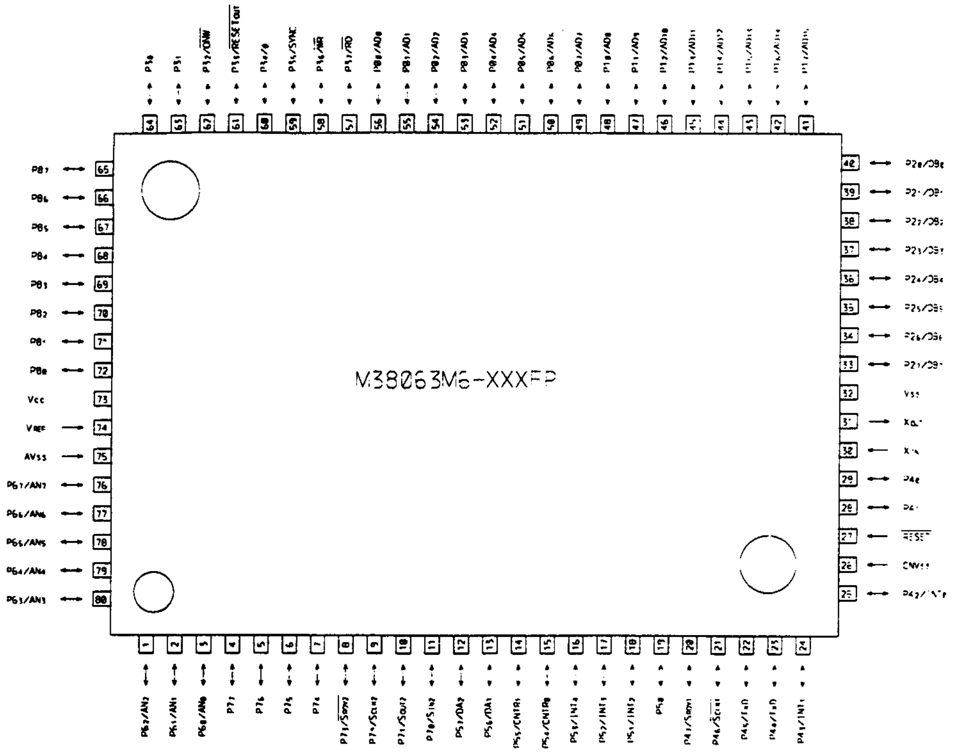

① ② ③
Vcc GND OUT
POWER SUPPLY
A : With constant current load
B : Open collector
25 μA (Standard)
R1
R2
1.25V
③ OUTPUT
② GND

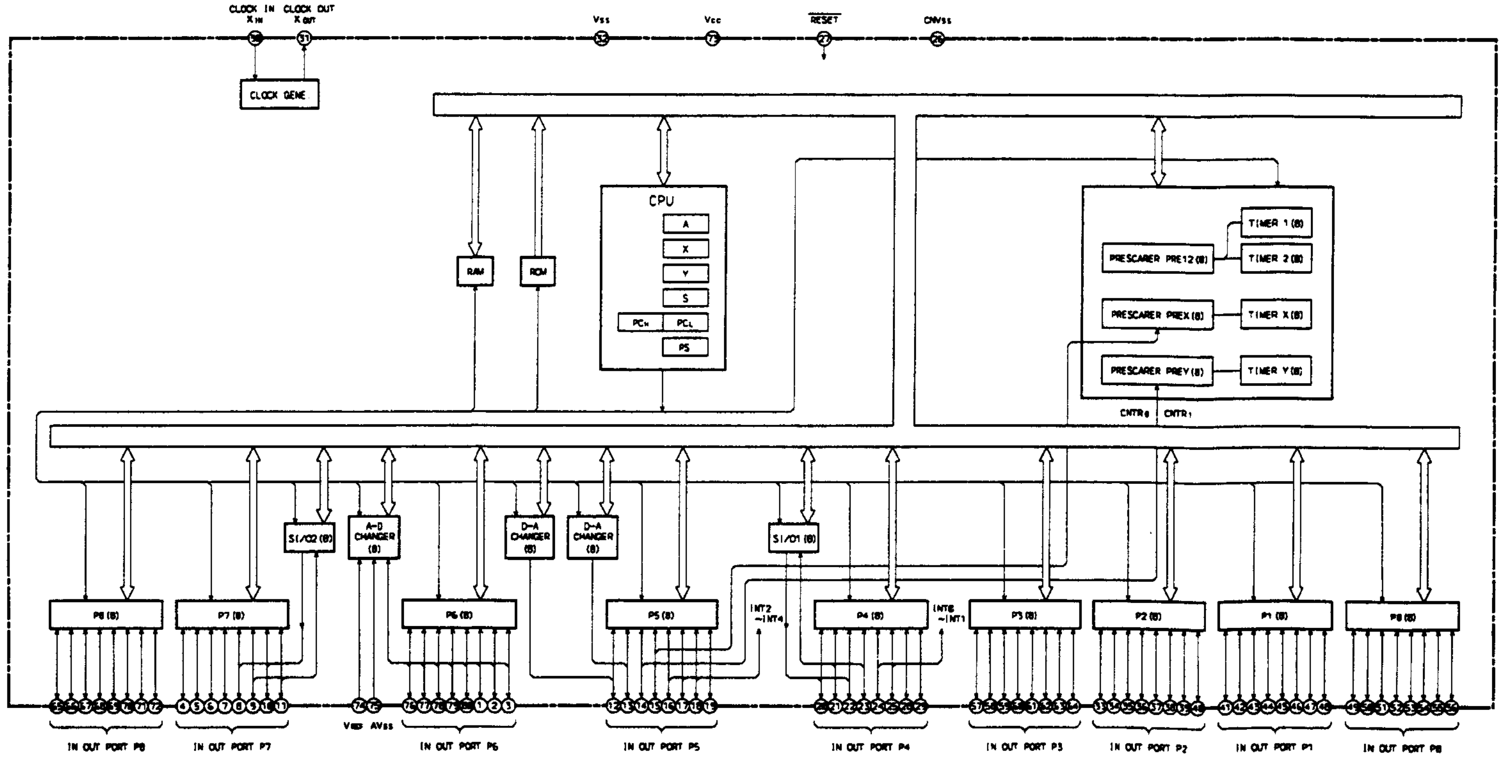
■ M5201FP 【MITSUBISHI】
(Switch Op Amp.)


SW CTL 1
INPUT A (+) 2
INPUT A (–) 3
Vcc (–) 4
8 Vcc (+)
7 INPUT B (+)
6 INPUT B (–)
5 OUTPUT

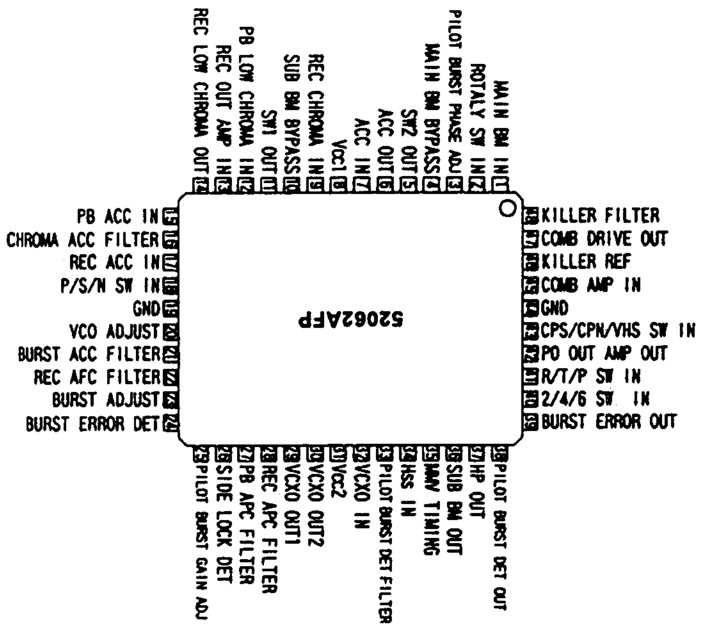

⑧ + Vcc
SWITCH CIRCUIT
A
INVERSION INPUT (–) ③
NON-INVERSION INPUT (+) ②
B
INVERSION INPUT (–) ⑥
NON-INVERSION INPUT (+) ⑦
Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8 Q9 Q10
A2
10k
Di x 6
Di x 4
④ - Vcc
⑤ OUTPUT
① CONTROL

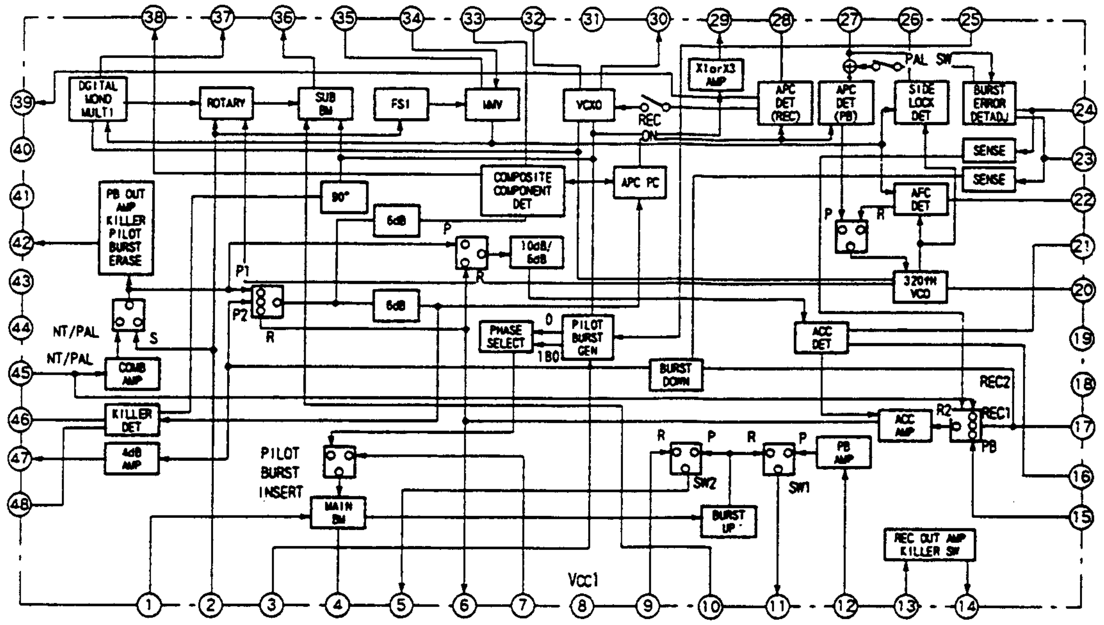
■ M38063E6-FP 【MITSUBISHI】
(Single-Chip 8bit CMOS Microcomputer)


M38063M6-XXXFP
Vcc
RESET
CNVss

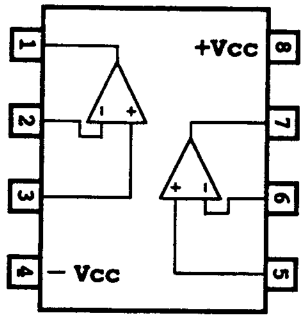

CLOCK IN
CLOCK OUT
CLOCK GENE
Vss
Vcc
RESET
CNVss
CPU
A
X
Y
S
PCH
PCL
PS
RAM
ROM
TIMER 1 (8)
TIMER 2 (8)
PRESCARER PRE12 (8)
PRESCARER PREX (8)
TIMER X (8)
PRESCARER PREY (8)
TIMER Y (8)
CNTR0 CNTR1
SI/O2 (8)
A-D CHANGER (8)
D-A CHANGER (8)
D-A CHANGER (8)
SI/O1 (8)
P8 (8)
P7 (8)
P6 (8)
P5 (8)
P4 (8)
P3 (8)
P2 (8)
P1 (8)
P0 (8)
INT2 ~INT4
INT0 ~INT1
Vref AVss
IN OUT PORT P8
IN OUT PORT P7
IN OUT PORT P6
IN OUT PORT P5
IN OUT PORT P4
IN OUT PORT P3
IN OUT PORT P2
IN OUT PORT P1
IN OUT PORT P0

■ M52062AFP 〔MITSUBISHI〕
(CHROMA Signal Processor for VTR)


52062AFP
MAIN BM IN
ROTALY SW IN
PILOT BURST PHASE ADJ
MAIN BM BYPASS
SW2 OUT
ACC OUT
ACC IN
Vcc1
SUB BM BYPASS
REC CHROMA IN
SW1 OUT
PB LOW CHROMA IN
REC OUT AMP IN
REC LOW CHROMA OUT
PB ACC IN
CHROMA ACC FILTER
REC ACC IN
P/S/N SW IN
GND
VCO ADJUST
BURST ACC FILTER
REC AFC FILTER
BURST ADJUST
BURST ERROR DET
KILLER FILTER
COMB DRIVE OUT
KILLER REF
COMB AMP IN
GND
CPS/CPN/VHS SW IN
PO OUT AMP OUT
R/T/P SW IN
2/4/6 SW IN
BURST ERROR OUT
PILOT BURST GAIN ADJ
SIDE LOCK DET
PB APC FILTER
REC APC FILTER
VCXO OUT1
VCXO OUT2
Vcc2
VCXO IN
PILOT BURST DET FILTER
HSS IN
MAIN TIMING
SUB BM OUT
HP OUT
PILOT BURST DET OUT

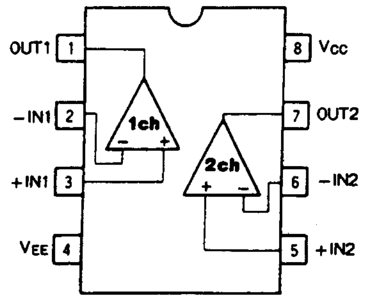

DIGITAL MONO MULTI
ROTARY
SUB BM
FS1
MMV
VCXO
X1 or X3 AMP
APC DET (REC)
APC DET (PB)
SIDE LOCK DET
BURST ERROR DETADJ
PAL SW
REC
ON
SENSE
SENSE
COMPOSITE COMPONENT DET
APC PC
AFC DET
90°
6dB
10dB/6dB
320fH VCO
PB OUT AMP KILLER PILOT BURST ERASE
P1
P2
6dB
PHASE SELECT
PILOT BURST GEN
ACC DET
NT/PAL
NT/PAL
COMB AMP
BURST DOWN
REC2
KILLER DET
4dB AMP
ACC AMP
REC1
PB
PILOT BURST INSERT
MAIN BM
SW2
SW1
PB AMP
BURST UP
REC OUT AMP KILLER SW
Vcc1

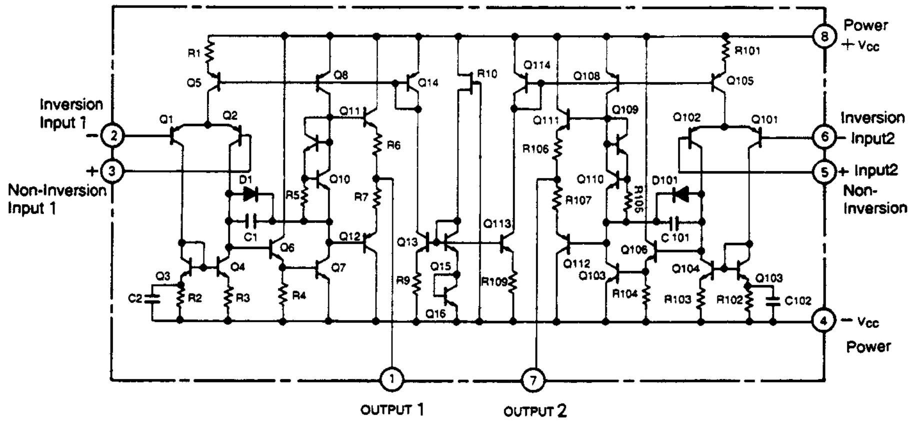
■ M5216FP 〔MITSUBISHI〕
(Dual Op Amp.)


+Vcc
– Vcc
1
2
3
4
5
6
7
8

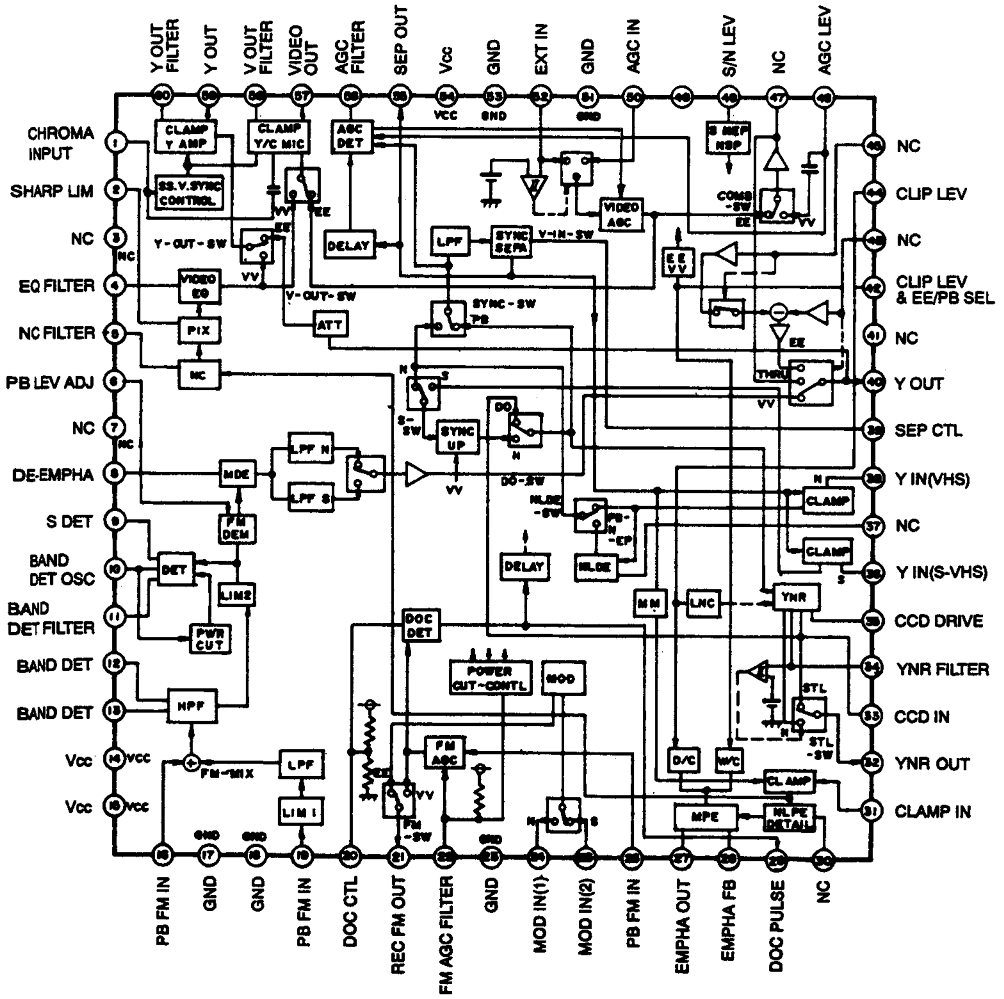
(TOP VIEW)

■ M5218AFP 〔MITSUBISHI〕
(Dual Op.Amp.)


OUT1 1
–IN1 2
+IN1 3
VEE 4
8 Vcc
7 OUT2
6 –IN2
5 +IN2
1ch
2ch

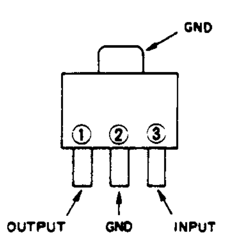

Power +Vcc
Inversion Input 1
Non-Inversion Input 1
Inversion Input2
Input2 Non-Inversion
– Vcc Power
OUTPUT 1
OUTPUT 2

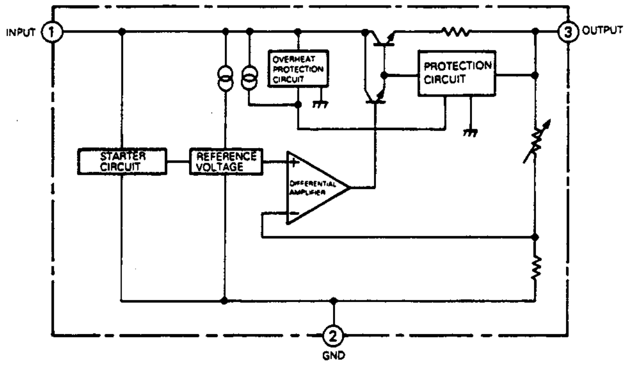
■ M52074FP 〔MITSUBISHI〕
(Luminance Signal Processor)


Y OUT FILTER
Y OUT
V OUT FILTER
VIDEO OUT
AGC FILTER
SEP OUT
Vcc
GND
EXT IN
GND
AGC IN
S/N LEV
NC
AGC LEV
CHROMA INPUT
SHARP LIM
NC
EQ FILTER
NC FILTER
PB LEV ADJ
NC
DE-EMPHA
S DET
BAND DET OSC
BAND DET FILTER
BAND DET
BAND DET
Vcc
Vcc
NC
CLIP LEV
NC
CLIP LEV & EE/PB SEL
NC
Y OUT
SEP CTL
Y IN(VHS)
NC
Y IN(S-VHS)
CCD DRIVE
YNR FILTER
CCD IN
YNR OUT
CLAMP IN
PB FM IN
GND
GND
PB FM IN
DOC CTL
REC FM OUT
FM AGC FILTER
GND
MOD IN(1)
MOD IN(2)
PB FM IN
EMPHA OUT
EMPHA FB
DOC PULSE
NC

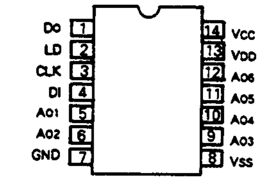
■ M5278L05M 〔MITSUBISHI〕
(3 Terminal Positive Voltage Regulator (+5V))

M TYPE

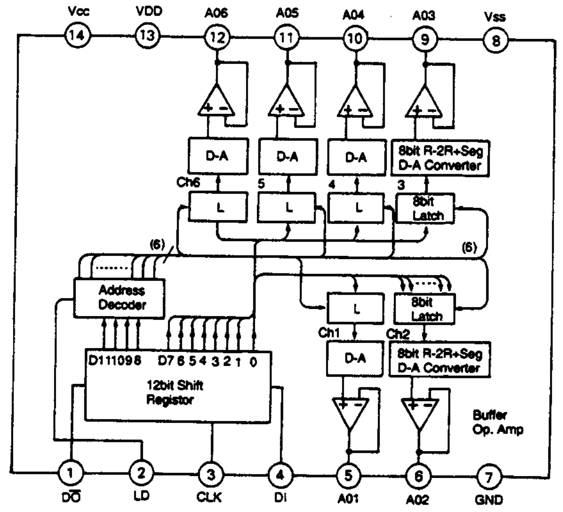

GND
① ② ③
OUTPUT
GND
INPUT


INPUT
OUTPUT
OVERHEAT PROTECTION CIRCUIT
PROTECTION CIRCUIT
STARTER CIRCUIT
REFERENCE VOLTAGE
DIFFERENTIAL AMPLIFIER
GND

■ M62354FP 〔MITSUBISHI〕
(8-Bit 6-Channel D/A Converter)

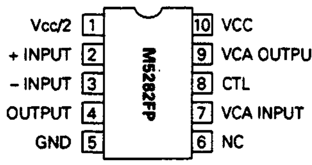

D0 1
LD 2
CLK 3
DI 4
A01 5
A02 6
GND 7
14 Vcc
13 VDD
12 A06
11 A05
10 A04
9 A03
8 Vss

(TOP VIEW)

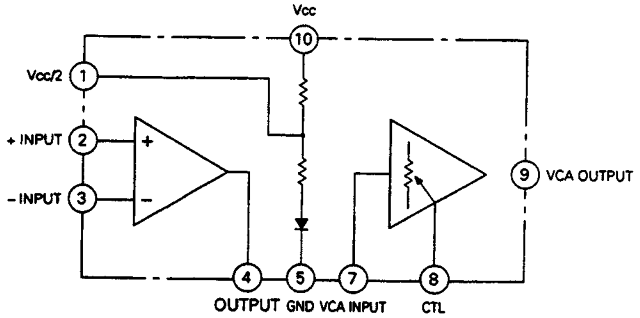

Vcc
VDD
A06
A05
A04
A03
Vss
D-A
8bit R-2R+Seg D-A Converter
Ch6
L
8bit Latch
Address Decoder
12bit Shift Register
Ch1
Ch2
Buffer Op. Amp
D0
LD
CLK
DI
A01
A02
GND

■ M5282FP 〔MITSUBISHI〕
(VCA and Op Amp.)

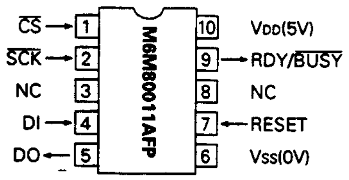
(TOP VIEW)


M5282FP
Vcc/2 1
+ INPUT 2
– INPUT 3
OUTPUT 4
GND 5
10 VCC
9 VCA OUTPUT
8 CTL
7 VCA INPUT
6 NC

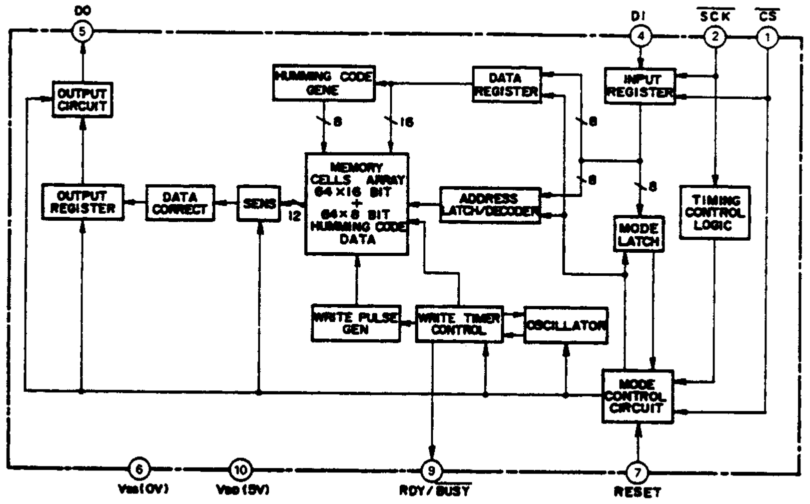
(BLOCK DIAGLAM)


Vcc
Vcc/2
+ INPUT
– INPUT
VCA OUTPUT
OUTPUT
GND
VCA INPUT
CTL

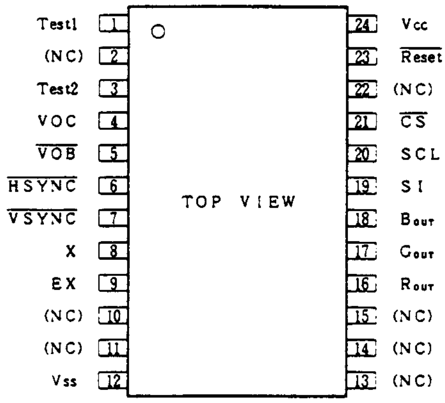
■ M6M80011AFP 〔MITSUBISHI〕
(EE PROM)

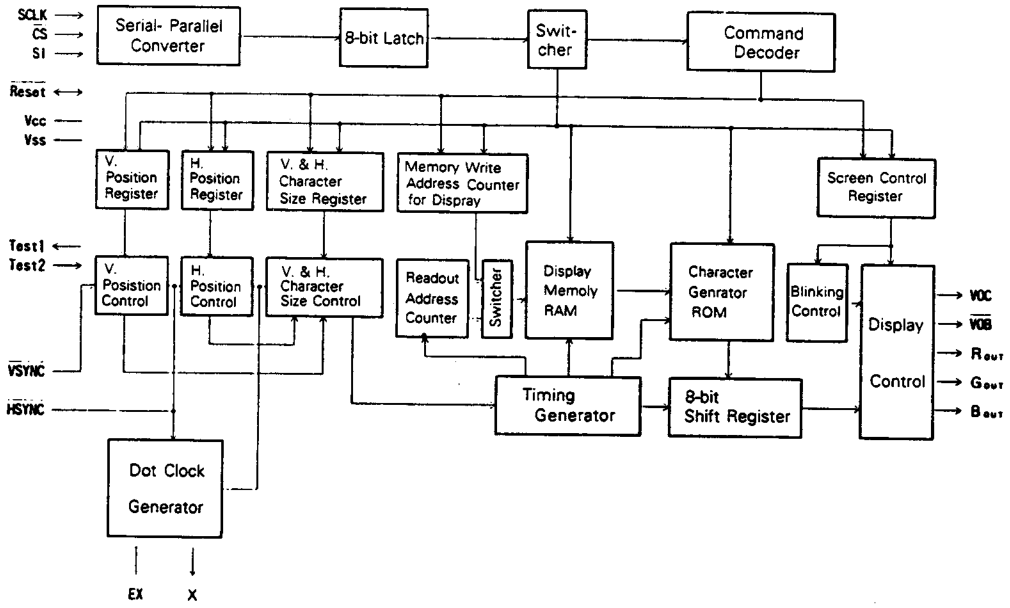

CS 1
SCK 2
NC 3
DI 4
DO 5
10 VDD(5V)
9 RDY/BUSY
8 NC
7 RESET
6 Vss(0V)
M6M80011AFP

(TOP VIEW)

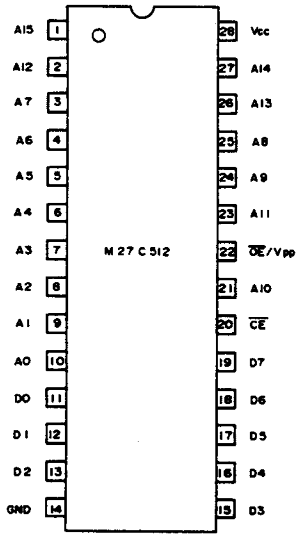

DO
DI
SCK
CS
OUTPUT CIRCUIT
HUMMING CODE GENE
DATA REGISTER
INPUT REGISTER
OUTPUT REGISTER
DATA CORRECT
SENS
MEMORY CELLS ARRAY 64×16 BIT + 64×6 BIT HUMMING CODE DATA
ADDRESS LATCH/DECODER
MODE LATCH
TIMING CONTROL LOGIC
WRITE PULSE GEN
WRITE TIMER CONTROL
OSCILLATOR
MODE CONTROL CIRCUIT
Vss(0V)
VDD(5V)
RDY/BUSY
RESET

■ MB89012-109 〔FUJITSU〕
(TV Display Controler)


Test1 1
(NC) 2
Test2 3
VOC 4
VOB 5
HSYNC 6
VSYNC 7
X 8
EX 9
(NC) 10
(NC) 11
Vss 12
24 Vcc
23 Reset
22 (NC)
21 CS
20 SCLK
19 SI
18 Bout
17 Gout
16 Rout
15 (NC)
14 (NC)
13 (NC)
TOP VIEW

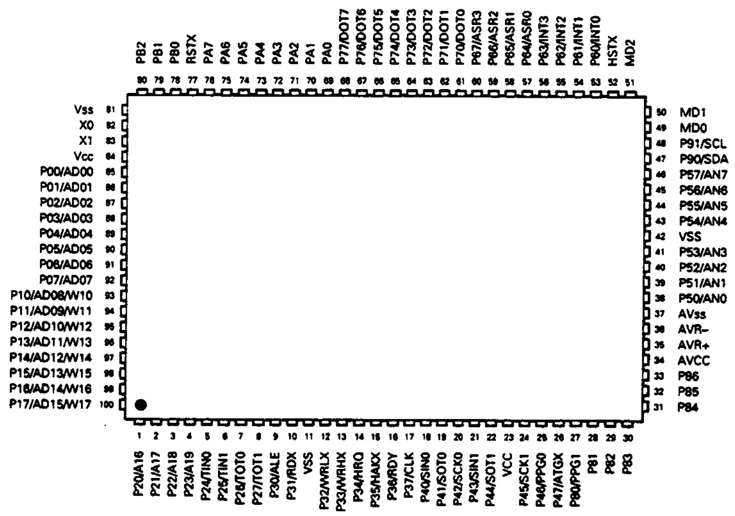

SCLK
CS
SI
Reset
Vcc
Vss
Serial- Parallel Converter
8-bit Latch
Swit-cher
Command Decoder
V. Position Register
H. Position Register
V. & H. Character Size Register
Memory Write Address Counter for Disp ray
Screen Control Register
Test1
Test2
V. Posistion Control
H. Position Control
V. & H. Character Size Control
Readout Address Counter
Switcher
Display Memoly RAM
Character Genrator ROM
Blinking Control
Display Control
VOC
VOB
Rout
Gout
Bout
VSYNC
HSYNC
Timing Generator
8-bit Shift Register
Dot Clock Generator
EX
X

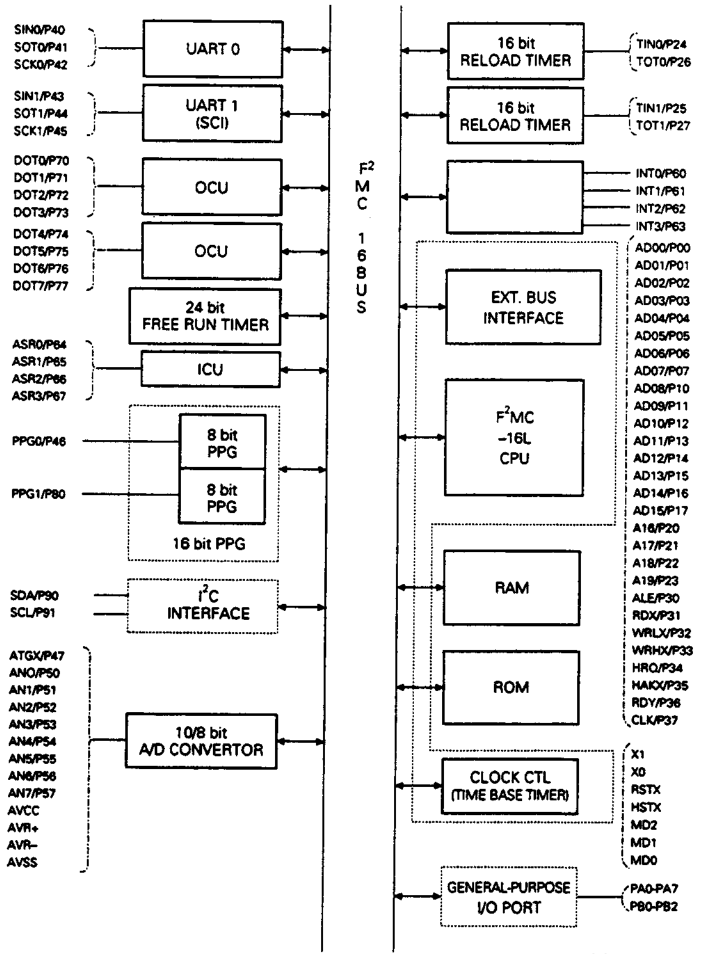
■ M27C512-15F1 〔MITSUBISHI〕
(524288 Bit Programmed EPROM)


A15 1
A12 2
A7 3
A6 4
A5 5
A4 6
A3 7
A2 8
A1 9
A0 10
D0 11
D1 12
D2 13
GND 14
28 Vcc
27 A14
26 A13
25 A8
24 A9
23 A11
22 OE/Vpp
21 A10
20 CE
19 D7
18 D6
17 D5
16 D4
15 D3
M27C512

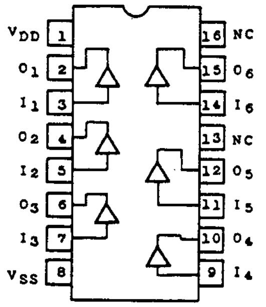
(TOP VIEW)

■ MB90T678PF 〔MITSUBISHI〕
(CPU)


PB2 PB1 PB0 RSTX PA7 PA6 PA5 PA4 PA3 PA2 PA1 PA0 P77/DOT7 P76/DOT6 P75/DOT5 P74/DOT4 P73/DOT3 P72/DOT2 P71/DOT1 P70/DOT0 P67/ASR3 P66/ASR2 P65/ASR1 P64/ASR0 P63/INT3 P62/INT2 P61/INT1 P60/INT0 HSTX MD2
Vss X0 X1 Vcc P00/AD00 P01/AD01 P02/AD02 P03/AD03 P04/AD04 P05/AD05 P06/AD06 P07/AD07 P10/AD08/W10 P11/AD09/W11 P12/AD10/W12 P13/AD11/W13 P14/AD12/W14 P15/AD13/W15 P16/AD14/W16 P17/AD15/W17
MD1 MD0 P91/SCL P90/SDA P57/AN7 P56/AN6 P55/AN5 P54/AN4 VSS P53/AN3 P52/AN2 P51/AN1 P50/AN0 AVss AVR- AVR+ AVCC P86 P85 P84
P20/A16 P21/A17 P22/A18 P23/A19 P24/TIN0 P25/TIN1 P26/TOT0 P27/TOT1 P30/ALE P31/RDX VSS P32/WRLX P33/WRHX P34/HRQ P35/HAKX P36/RDY P37/CLK P40/SIN0 P41/SOT0 P42/SCK0 P43/SIN1 P44/SOT1 VCC P45/SCK1 P46/PPG0 P47/ATGX P80/PPG1 P81 P82 P83

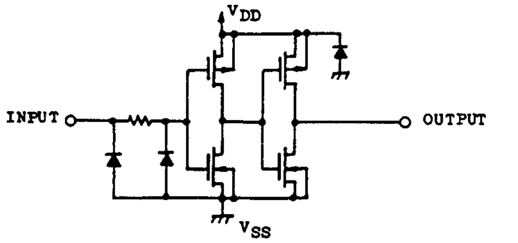

SIN0/P40 SOT0/P41 SCK0/P42
UART 0
SIN1/P43 SOT1/P44 SCK1/P45
UART 1 (SCI)
DOT0/P70 DOT1/P71 DOT2/P72 DOT3/P73
OCU
DOT4/P74 DOT5/P75 DOT6/P76 DOT7/P77
OCU
24 bit FREE RUN TIMER
ASR0/P64 ASR1/P65 ASR2/P66 ASR3/P67
ICU
PPG0/P46
PPG1/P80
8 bit PPG
8 bit PPG
16 bit PPG
SDA/P90 SCL/P91
I²C INTERFACE
ATGX/P47 AN0/P50 AN1/P51 AN2/P52 AN3/P53 AN4/P54 AN5/P55 AN6/P56 AN7/P57 AVCC AVR+ AVR- AVSS
10/8 bit A/D CONVERTOR
F²MC 16 BUS
16 bit RELOAD TIMER
TIN0/P24 TOT0/P26
16 bit RELOAD TIMER
TIN1/P25 TOT1/P27
INT0/P60 INT1/P61 INT2/P62 INT3/P63
EXT. BUS INTERFACE
AD00/P00 AD01/P01 AD02/P02 AD03/P03 AD04/P04 AD05/P05 AD06/P06 AD07/P07 AD08/P10 AD09/P11 AD10/P12 AD11/P13 AD12/P14 AD13/P15 AD14/P16 AD15/P17 A16/P20 A17/P21 A18/P22 A19/P23 ALE/P30 RDX/P31 WRLX/P32 WRHX/P33 HRQ/P34 HAKX/P35 RDY/P36 CLK/P37
F²MC -16L CPU
RAM
ROM
CLOCK CTL (TIME BASE TIMER)
X1 X0 RSTX HSTX MD2 MD1 MD0
GENERAL-PURPOSE I/O PORT
PA0-PA7 PB0-PB2

■ MC14050BFL 〔MOTOROLA〕
(Hex Non Inverting Buffer)

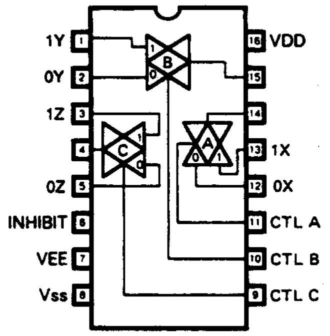

VDD 1
O1 2
I1 3
O2 4
I2 5
O3 6
I3 7
VSS 8
16 NC
15 O6
14 I6
13 NC
12 O5
11 I5
10 O4
9 I4

(TOP VIEW)

BLOCK DIAGRAM


VDD
INPUT
OUTPUT
VSS

■ MC14053BF 〔MOTOROLA〕
(Triple 2 Channel Analog Multiplexers/ Demultiplexers)


1Y 1
0Y 2
1Z 3
4
0Z 5
INHIBIT 6
VEE 7
Vss 8
16 VDD
15
14
13 1X
12 0X
11 CTL A
10 CTL B
9 CTL C
A
B
C

(TOP VIEW)

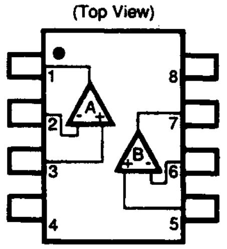
TRUTH TABLE

CONTROL INPUTS				"ON" CHANNEL
INHIBIT	C	B	A	4053BP 4053BF
L	L	L	L	0X, 0Y, 0Z
L	L	L	H	1X, 0Y, 0Z
L	L	H	L	0X, 1Y, 0Z
L	L	H	H	1X, 1Y, 0Z
L	H	L	L	0X, 0Y, 1Z
L	H	L	H	1X, 0Y, 1Z
L	H	H	L	0X, 1Y, 1Z
L	H	H	H	1X, 1Y, 1Z
H	*	*	*	NOTE

* Don't Care.

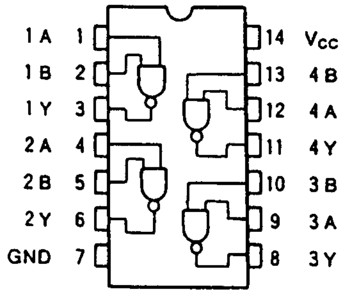
■ MC14577CF 【MOTOROLA】
(Dual Op.Amp.)

(Top View)


1
2
3
4
5
6
7
8
A
B

Pin
1. A OUTPUT
2. A−INPUT
3. A+INPUT
4. GROUND
5. B+INPUT
6. B−INPUT
7. B OUTPUT
8. V+

■ MC74HC00AF 【MOTOROLA】
(Quad 2-Input NAND Gates)

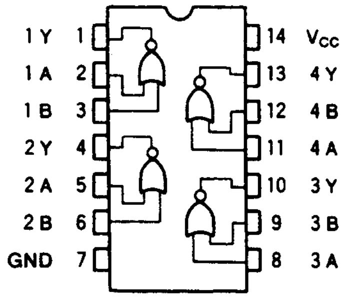

1A 1
1B 2
1Y 3
2A 4
2B 5
2Y 6
GND 7
14 Vcc
13 4B
12 4A
11 4Y
10 3B
9 3A
8 3Y

(TOP VIEW)

TRUE Table

A	B	Y
L	L	H
L	H	H
H	L	H
H	H	L

■ MC74HC02AF 【MOTOROLA】
(Quad 2-Input NOR Gates)

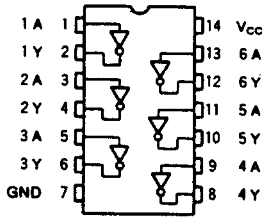

1Y 1
1A 2
1B 3
2Y 4
2A 5
2B 6
GND 7
14 Vcc
13 4Y
12 4B
11 4A
10 3Y
9 3B
8 3A

(TOP VIEW)

TRUE Table

A	B	Y
L	L	H
L	H	L
H	L	L
H	H	L

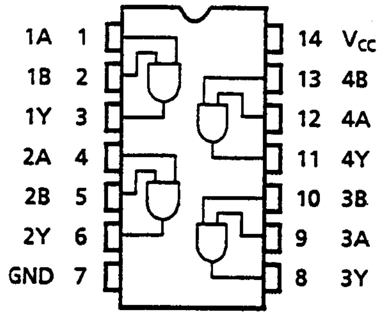
■ MC74HC04AF 【MOTOROLA】
(Hex Inverters)


1A 1
1Y 2
2A 3
2Y 4
3A 5
3Y 6
GND 7
14 Vcc
13 6A
12 6Y
11 5A
10 5Y
9 4A
8 4Y

(TOP VIEW)

■ MC14577CP 【MOTOROLA】
(Refer to MC14577CF.)

■ MC74HC08AF 【MOTOROLA】
(Quad 2-Input AND Gates)

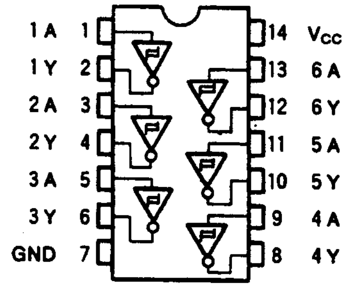

1A 1
1B 2
1Y 3
2A 4
2B 5
2Y 6
GND 7
14 Vcc
13 4B
12 4A
11 4Y
10 3B
9 3A
8 3Y

(TOP VIEW)

TRUE Table

A	B	Y
L	L	L
L	H	L
H	L	L
H	H	H

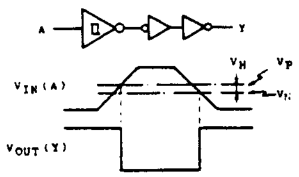
■ MC74HC14AF 【MOTOROLA】
(Hex Schmitt-Trigger Inverters)


1A 1
1Y 2
2A 3
2Y 4
3A 5
3Y 6
GND 7
14 Vcc
13 6A
12 6Y
11 5A
10 5Y
9 4A
8 4Y

(TOP VIEW)

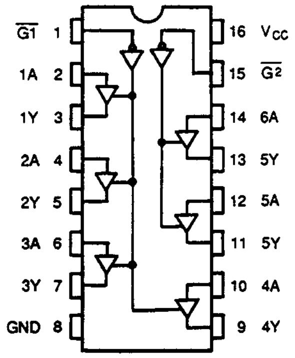
TRUE Table

A	Y
L	H
H	L


A
Y
VIN(A)
VOUT(Y)
VH
VP
VN

Vcc=4.5 V V_P=2.7 V typ.
V_N=1.6 V typ.

■ MC74HC367F 【MOTOROLA】
(Hex Bus Drivers With 3-State NON-Inverted Output)


G1 1
1A 2
1Y 3
2A 4
2Y 5
3A 6
3Y 7
GND 8
16 Vcc
15 G2
14 6A
13 5Y
12 5A
11 5Y
10 4A
9 4Y

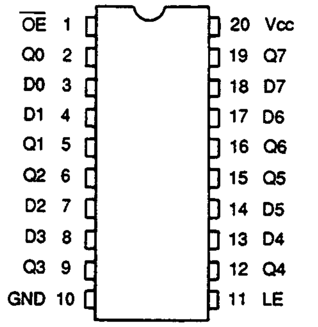
(Top View)

TRUE Table

INPUTS		OUTPUTS	
$\overline{G}$	An	Y(367A)	$\overline{Y}$(368A)
L	L	L	H
L	H	H	L
H	X	Z	Z

X:DON'T CARE Z:HIGH IMPEDANCE

■ MC74HC373AF 【MOTOROLA】
(Octal D-Type Latch With NON-Inverted 3-State Output)

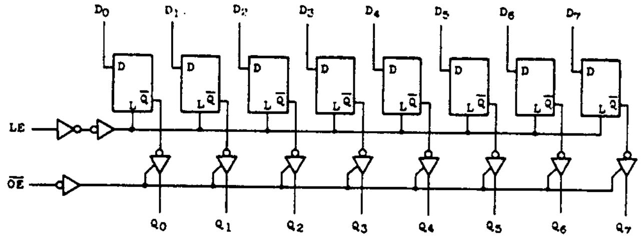

OE 1
Q0 2
D0 3
D1 4
Q1 5
Q2 6
D2 7
D3 8
Q3 9
GND 10
20 Vcc
19 Q7
18 D7
17 D6
16 Q6
15 Q5
14 D5
13 D4
12 Q4
11 LE

(Top View)

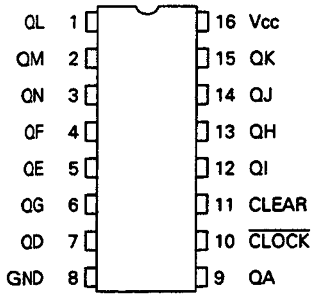
TRUE Table

INPUTS			OUTPUTS
$\overline{OE}$	LE	D	
H	X	X	Z
L	L	X	Q_n
L	H	L	L
L	H	H	H

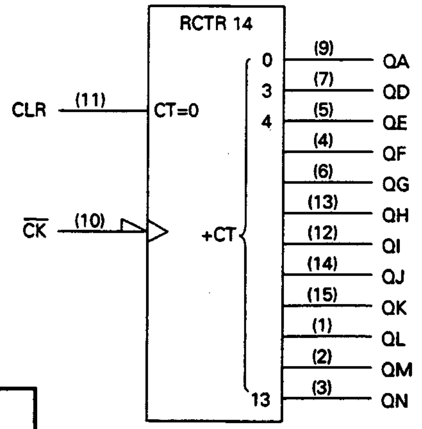
X : Don't Care
Z : Hi impedance
Qn : Q output level before the LE become "L".


D0
D1
D2
D3
D4
D5
D6
D7
LE
OE
Q0
Q1
Q2
Q3
Q4
Q5
Q6
Q7

■ MC74HC4020FL1 【MOTOROLA】
(14-Stage Binary Ripple Counter)


QL 1
QM 2
QN 3
QF 4
QE 5
QG 6
QD 7
GND 8
16 Vcc
15 QK
14 QJ
13 QH
12 QI
11 CLEAR
10 CLOCK
9 QA

(TOP VIEW)

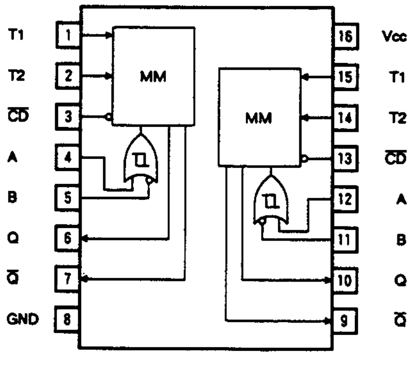

RCTR 14
CLR
(11)
CT=0
CK
(10)
+CT
0
3
4
13
(9) QA
(7) QD
(5) QE
(4) QF
(6) QG
(13) QH
(12) QI
(14) QJ
(15) QK
(1) QL
(2) QM
(3) QN

TRUE TABLE

$\overline{CLOCK}$	CLEAR	OUTPUTS
X	H	L (ALL)
↑	L	NO CHANGE
↓	L	GO TO NEXT STATE

X :DON'T CARE

■ MC74HC4538AF 【MOTOROLA】
(Dual Retriggerable Monostable Multivibrator)

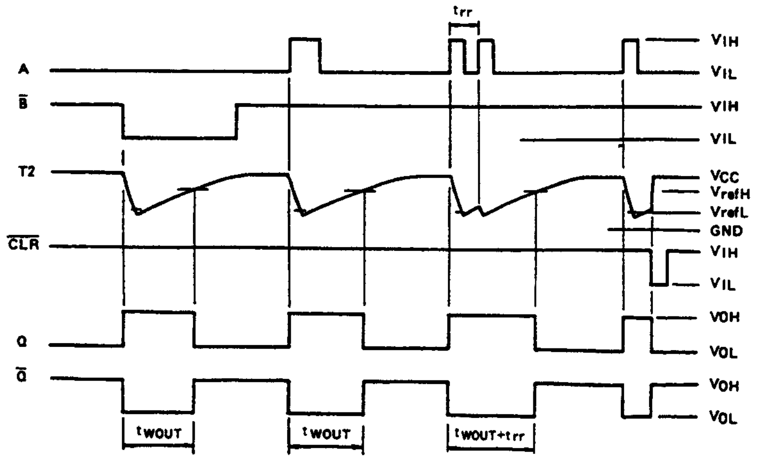

T1 1
T2 2
CD 3
A 4
B 5
Q 6
Q 7
GND 8
16 Vcc
15 T1
14 T2
13 CD
12 A
11 B
10 Q
9 Q
MM
MM

TOP VIEW

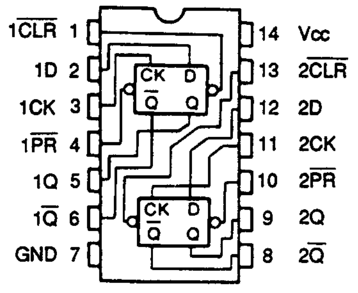
TRUE Table

INPUT			OUTPUT		NOTE
A	$\overline{B}$	$\overline{CD}$	Q	$\overline{Q}$	
↑	H	H	⎍	⎏	OUTPUT ENABLE
X	L	H	L	H	INHIBIT
H	X	H	L	H	INHIBIT
L	↓	H	⎍	⎏	OUTPUT ENABLE
X	X	L	L	H	INHIBIT

X:Don't Care



■ MC74HC74AF 【MOTOROLA】
(Dual D-Type Positive-EDGE-Triggered Flip-Flops With Preset AND Clear)


1CLR 1
1D 2
1CK 3
1PR 4
1Q 5
1Q 6
GND 7
14 Vcc
13 2CLR
12 2D
11 2CK
10 2PR
9 2Q
8 2Q
CK D
Q Q
CK D
Q Q

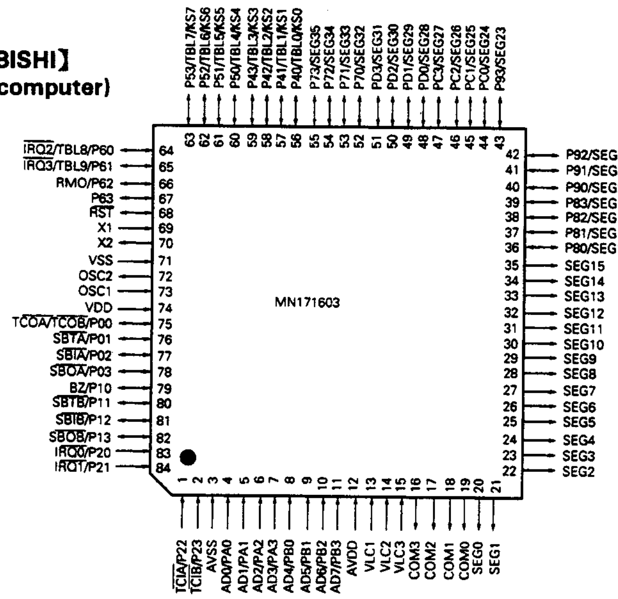
(Top View)

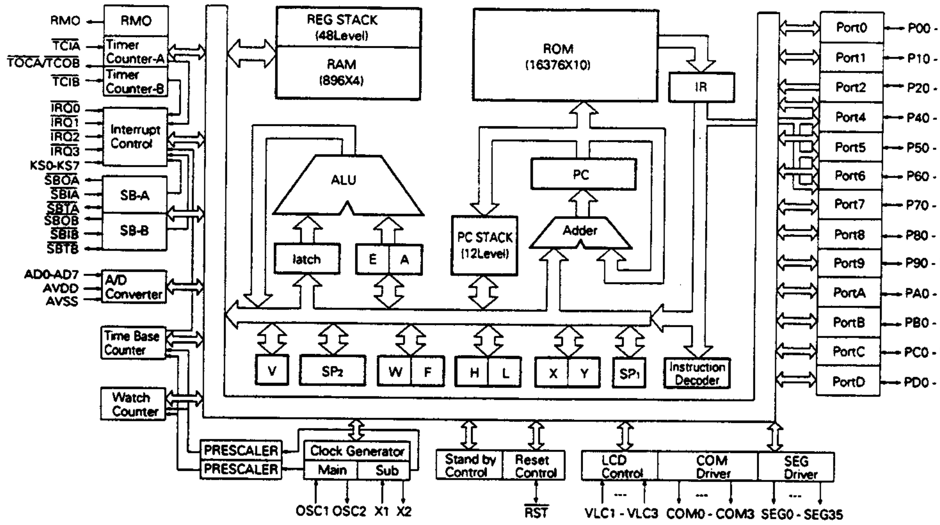
TRUE Table

INPUTS				OUTPUTS		FUNCTION
$\overline{CLR}$	$\overline{PR}$	D	CK	Q	$\overline{Q}$	
L	H	X	X	L	H	CLEAR
H	L	X	X	H	L	PRESET
L	L	X	X	H	H	—
H	H	L	↑	L	H	—
H	H	H	↑	H	L	—
H	H	X	↓	Q_0	$\overline{Q}_0$	NO CHANGE

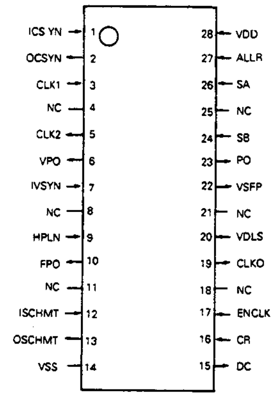
X : Don't care

■ PLSC1143 【JVC】
■ MN17P1603FB 【MITSUBISHI】
(Single-Chip 4-bit Microcomputer)

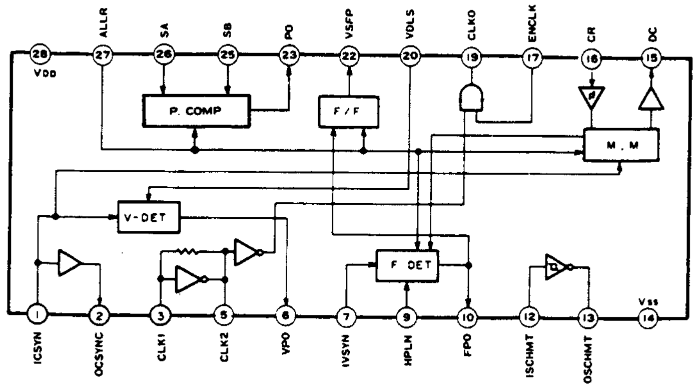

P53/TBL7/KS7
P52/TBL6/KS6
P51/TBL5/KS5
P50/TBL4/KS4
P43/TBL3/KS3
P42/TBL2/KS2
P41/TBL1/KS1
P40/TBL0/KS0
P73/SEG35
P72/SEG34
P71/SEG33
P70/SEG32
PD3/SEG31
PD2/SEG30
PD1/SEG29
PD0/SEG28
PC3/SEG27
PC2/SEG26
PC1/SEG25
PC0/SEG24
P93/SEG23
IRQ2/TBL8/P60 64
IRQ3/TBL9/P61 65
RMO/P62 66
P63 67
RST 68
X1 69
X2 70
VSS 71
OSC2 72
OSC1 73
VDD 74
TCOA/TCOB/P00 75
SBTA/P01 76
SBIA/P02 77
SBOA/P03 78
BZ/P10 79
SBTB/P11 80
SBIB/P12 81
SBOB/P13 82
IRQ0/P20 83
IRQ1/P21 84
MN171603
42 P92/SEG22
41 P91/SEG21
40 P90/SEG20
39 P83/SEG19
38 P82/SEG18
37 P81/SEG17
36 P80/SEG16
35 SEG15
34 SEG14
33 SEG13
32 SEG12
31 SEG11
30 SEG10
29 SEG9
28 SEG8
27 SEG7
26 SEG6
25 SEG5
24 SEG4
23 SEG3
22 SEG2
63 62 61 60 59 58 57 56 55 54 53 52 51 50 49 48 47 46 45 44 43
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21
TCIA/P22
TCIB/P23
AVSS
AD0/PA0
AD1/PA1
AD2/PA2
AD3/PA3
AD4/PB0
AD5/PB1
AD6/PB2
AD7/PB3
AVDD
VLC1
VLC2
VLC3
COM3
COM2
COM1
COM0
SEG0
SEG1


RMO
RMO
TCIA
TOCA/TCOB
TCIB
Timer Counter-A
Timer Counter-B
IRQ0
IRQ1
IRQ2
IRQ3
KS0-KS7
Interrupt Control
SBOA
SBIA
SBTA
SBOB
SBIB
SBTB
SB-A
SB-B
AD0-AD7
AVDD
AVSS
A/D Converter
Time Base Counter
Watch Counter
REG STACK (48Level)
RAM (896X4)
ROM (16376X10)
IR
ALU
PC
PC STACK (12Level)
Adder
latch
E
A
V
SP₂
W
F
H
L
X
Y
SP₁
Instruction Decoder
Port0 P00 - P03
Port1 P10 - P13
Port2 P20 - P23
Port4 P40 - P43
Port5 P50 - P53
Port6 P60 - P63
Port7 P70 - P73
Port8 P80 - P83
Port9 P90 - P93
PortA PA0 - PA3
PortB PB0 - PB3
PortC PC0 - PC3
PortD PD0 - PD3
PRESCALER
PRESCALER
Clock Generator
Main
Sub
OSC1 OSC2 X1 X2
Stand by Control
Reset Control
RST
LCD Control
COM Driver
SEG Driver
VLC1 - VLC3
COM0 - COM3
SEG0 - SEG35

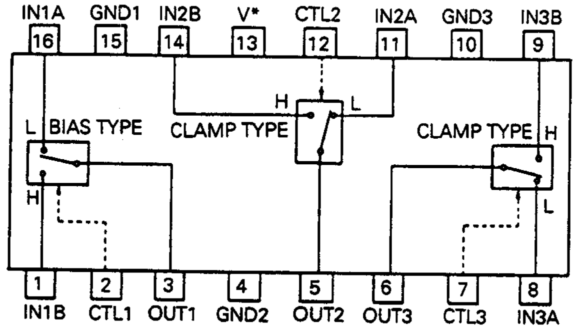
■ MN50005JVES 【MATSUSHITA DENSHI】
(Frame Detector)


ICS YN 1
OCSYN 2
CLK1 3
NC 4
CLK2 5
VPO 6
IVSYN 7
NC 8
HPLN 9
FPO 10
NC 11
ISCHMT 12
OSCHMT 13
VSS 14
28 VDD
27 ALLR
26 SA
25 NC
24 SB
23 PO
22 VSFP
21 NC
20 VDLS
19 CLKO
18 NC
17 ENCLK
16 CR
15 DC

(TOP VIEW)

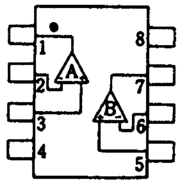

ALLR
SA
SB
PO
VSFP
VDLS
CLKO
ENCLK
CR
DC
28
VDD
27
26
25
23
22
20
19
17
16
15
P. COMP
F / F
M . M
V-DET
F DET
1
2
3
5
6
7
9
10
12
13
14
Vss
ICSYN
OCSYNC
CLK1
CLK2
VPO
IVSYN
HPLN
FPO
ISCHMT
OSCHMT

■ NJM2285M 【JRC】
(Video Switch)

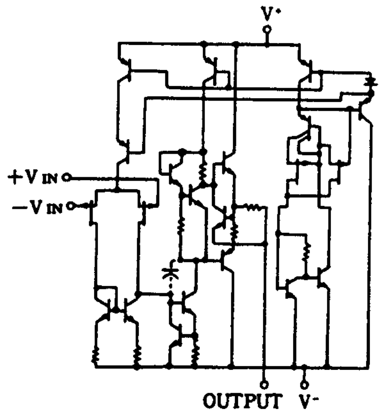

IN1A
GND1
IN2B
V⁺
CTL2
IN2A
GND3
IN3B
16
15
14
13
12
11
10
9
BIAS TYPE
CLAMP TYPE
CLAMP TYPE
L
H
H
L
H
L
1
2
3
4
5
6
7
8
IN1B
CTL1
OUT1
GND2
OUT2
OUT3
CTL3
IN3A

■ NJM062M 【JRC】
(J-FET Input Op.Amp)

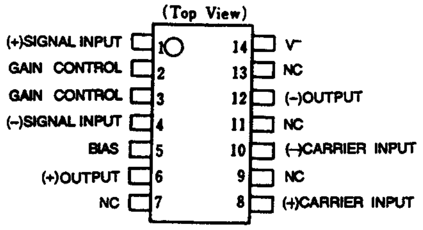
(Top View)

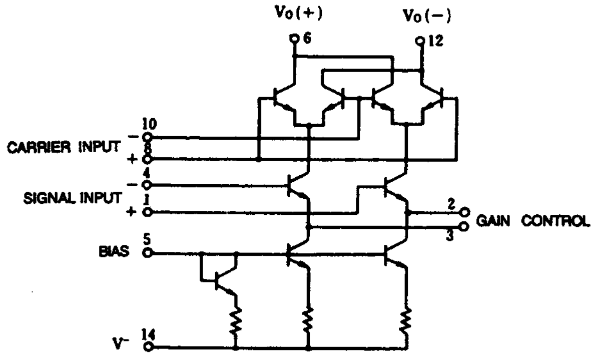

1
2
3
4
5
6
7
8
A
B

1. A OUTPUT
2. A−INPUT
3. A+INPUT
4. V⁻
5. B+INPUT
6. B−INPUT
7. B OUTPUT
8. V⁺

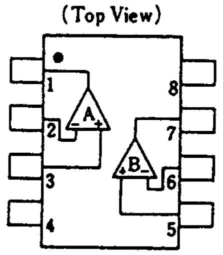

V⁺
+V IN
−V IN
OUTPUT
V⁻

■ NJM1496M 【JRC】
(Balanced Modulator)

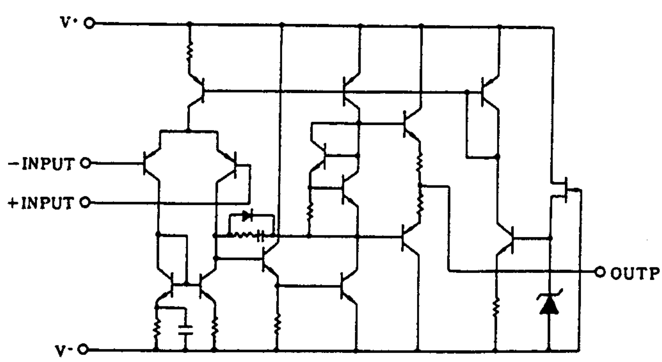

(Top View)
(+)SIGNAL INPUT 1
GAIN CONTROL 2
GAIN CONTROL 3
(−)SIGNAL INPUT 4
BIAS 5
(+)OUTPUT 6
NC 7
14 V⁻
13 NC
12 (−)OUTPUT
11 NC
10 (−)CARRIER INPUT
9 NC
8 (+)CARRIER INPUT


Vo(+)
6
Vo(−)
12
CARRIER INPUT
10
8
SIGNAL INPUT
4
1
2
3
GAIN CONTROL
BIAS
5
V⁻
14

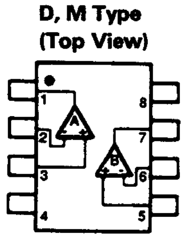
■ NJM2068MD 【JRC】
(Dual Low-Noise Op.Amp.)


(Top View)
1
2
3
4
5
6
7
8
A
B

1. A OUTPUT
2. A−INPUT
3. A+INPUT
4. V⁻
5. B+INPUT
6. B−INPUT
7. B OUTPUT
8. V⁺


V⁺
−INPUT
+INPUT
OUTPUT
V⁻

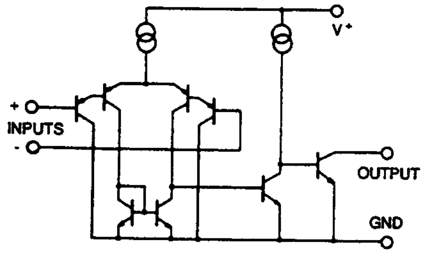
■ NJM2903M 【JRC】
(Dual Single Supply Comparator)


D, M Type
(Top View)
1
2
3
4
5
6
7
8
A
B

Pin Assignment

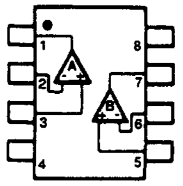
1. A OUTPUT
2. A−INPUT
3. A+INPUT
4. GND
5. B+INPUT
6. B−INPUT
7. B OUTPUT
8. V⁺

■ **Equivalent Circuit (2 circuits in a chip)**


V⁺
+
INPUTS
-
OUTPUT
GND

■ NJM2904M 【JRC】
(Dual Single Supply Op.Amp.)

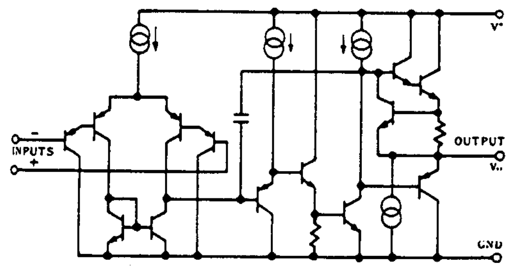
D, M Type
(Top View)


1
2
3
4
5
6
7
8
A
B

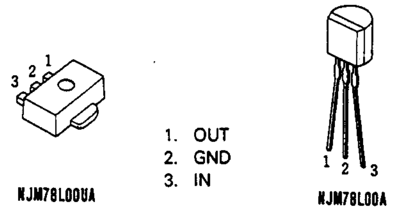
Pin Assignment

1. A OUTPUT
2. A−INPUT
3. A+INPUT
4. GND
5. B+INPUT
6. B−INPUT
7. B OUTPUT
8. V⁺

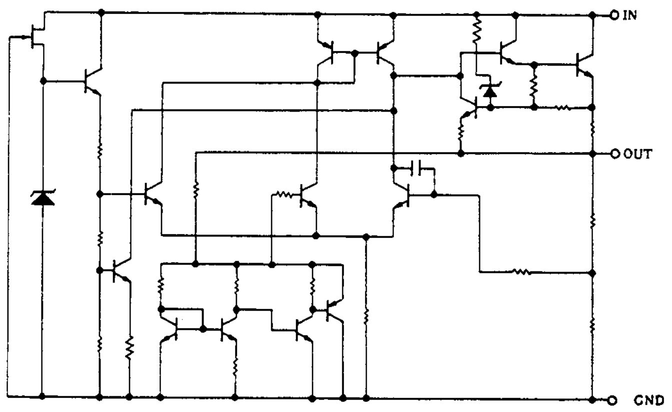
■ Equivalent Circuit (2 circuits in a chip)


V⁺
INPUTS
−
+
OUTPUT
V₀
GND

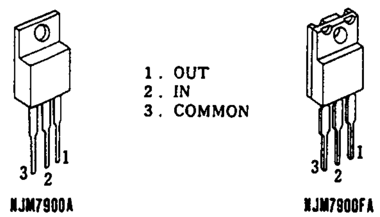
■ NJM78L15UA 【JRC】
(3-Terminal Positive Voltage Regulator (+15V))


3
2
1
NJM78L00UA
1
2
3
NJM78L00A

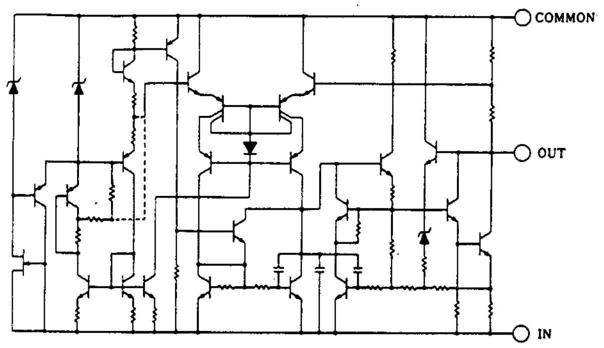
1. OUT
2. GND
3. IN



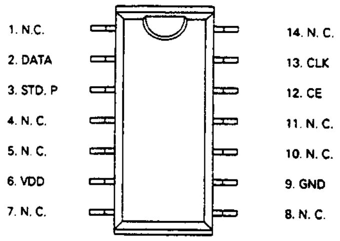
■ NJM79M05FA 【JRC】
(3-Terminal Negative Voltage Regulator (−5V))

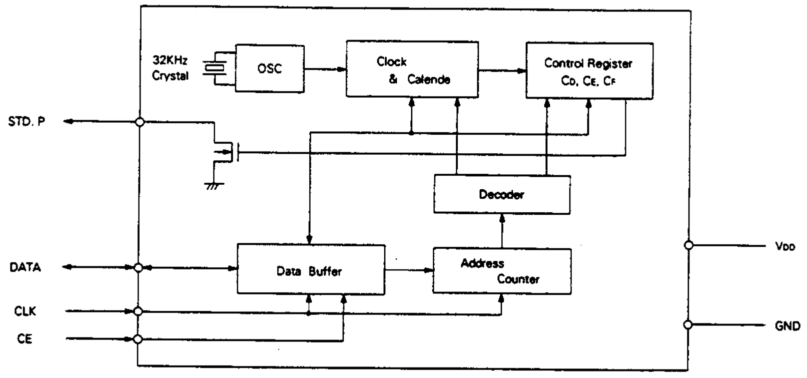

3
2
1
NJM7900A
3
2
1
NJM7900FA

1. OUT
2. IN
3. COMMON

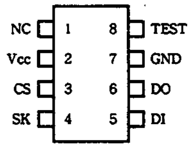

COMMON
OUT
IN

■ RTC-4513A 【EPSON】
(Real Time Clock)

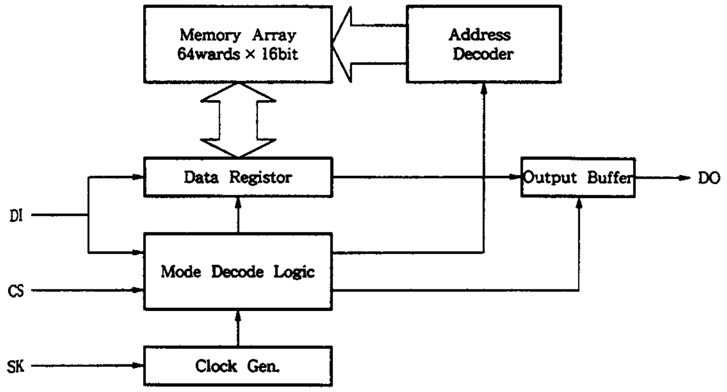

1. N.C.
2. DATA
3. STD. P
4. N. C.
5. N. C.
6. VDD
7. N. C.
14. N. C.
13. CLK
12. CE
11. N. C.
10. N. C.
9. GND
8. N. C.


32KHz Crystal
OSC
Clock & Calende
Control Register Cᴅ, Cᴇ, Cꜰ
STD. P
Decoder
DATA
Data Buffer
Address Counter
CLK
CE
Vᴅᴅ
GND

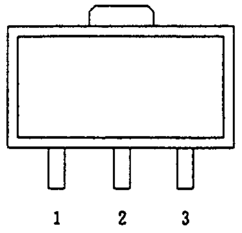
■ S-2914AIF10 【SEIKO】
(1K-Bit Serial EE PROM)


NC
Vcc
CS
SK
1
2
3
4
8
7
6
5
TEST
GND
DO
DI

PIN No.	SIGNAL	PIN No.	SIGNAL
1	No Connect	5	Serial Data Input
2	Vcc (+5V)	6	Serial Data Output
3	Chip Select	7	GND (0V)
4	Serial Clock	8	No Connect

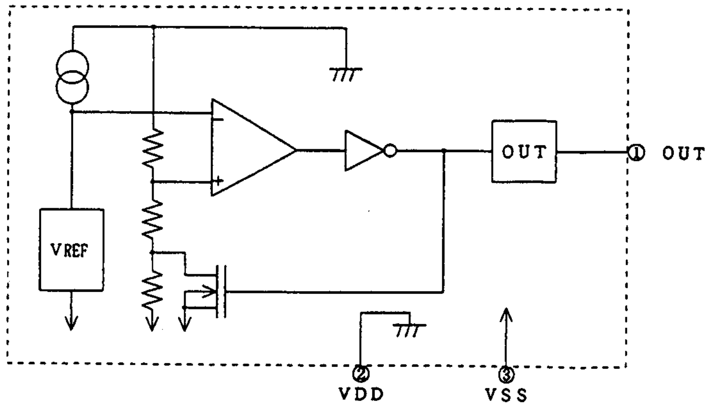

Memory Array
64wards × 16bit
Address Decoder
Data Registor
Output Buffer
DO
DI
Mode Decode Logic
CS
SK
Clock Gen.

■ S-8051HN-CD 【SEIKO】
(Voltage Detector)

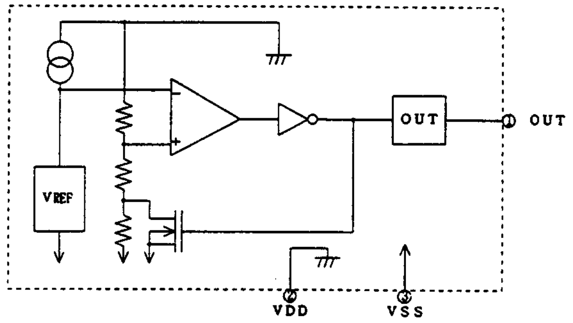


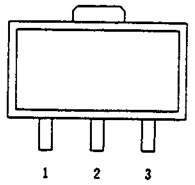
(TOP VIEW)

1. OUT
2. VDD
3. VSS


VREF
OUT
① OUT
②
VDD
③
VSS

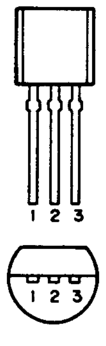
■ S-8054HNCB 【SEIKO INSTRUMENTS】
(C-MOS Voltage Detector)


VREF
OUT
① OUT
②
VDD
③
VSS

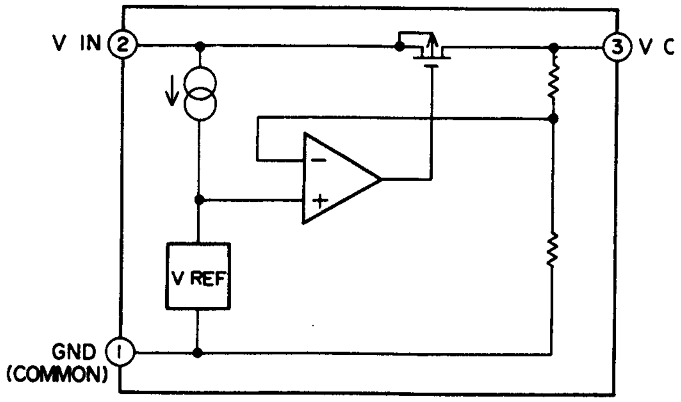


1. OUT
2. VDD
3. VSS

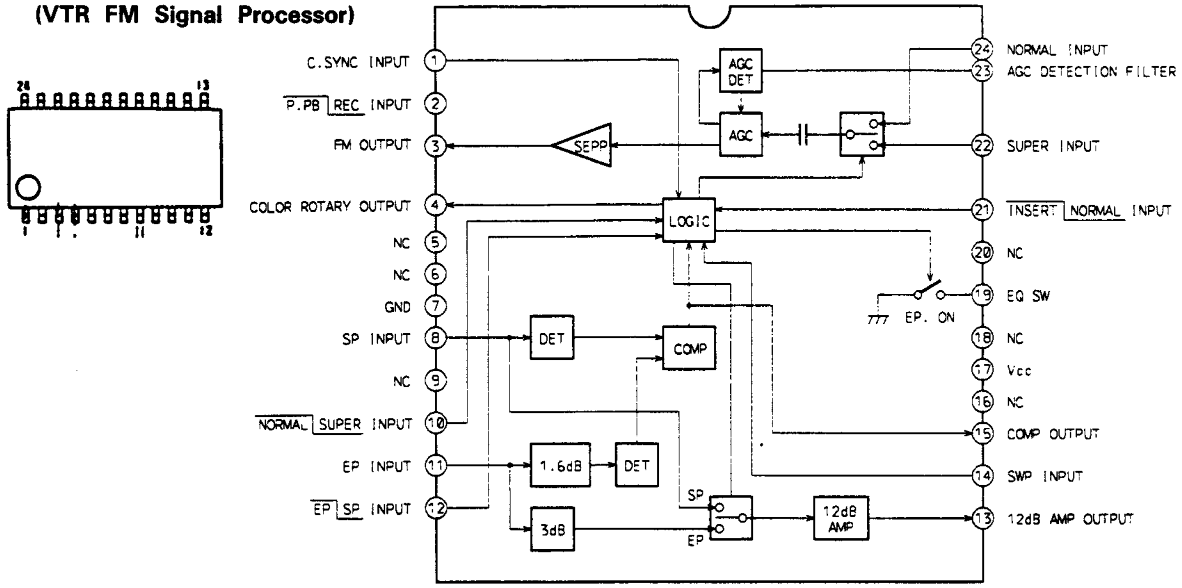
■ S-81252HG 【SEIKO INSTRUMENTS】
(Voltage Detector)



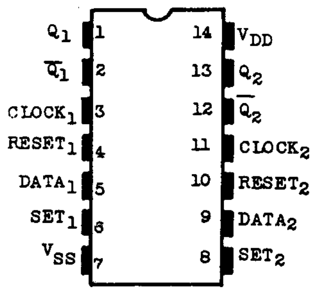
1 GND
2 V IN
3 V OUT


V IN ②
③ V C
−
+
V REF
GND ①
(COMMON)

■ TA8733F 【TOSHIBA】
(VTR FM Signal Processor)

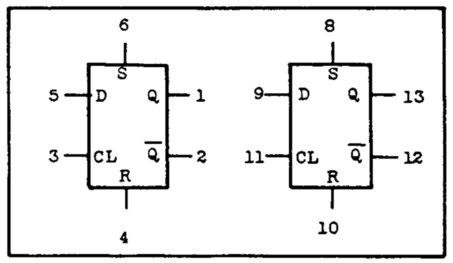

C.SYNC INPUT
P.PB REC INPUT
FM OUTPUT
COLOR ROTARY OUTPUT
NC
NC
GND
SP INPUT
NC
NORMAL SUPER INPUT
EP INPUT
EP SP INPUT
NORMAL INPUT
AGC DETECTION FILTER
SUPER INPUT
INSERT NORMAL INPUT
NC
EQ SW
NC
Vcc
NC
COMP OUTPUT
SWP INPUT
12dB AMP OUTPUT
AGC DET
AGC
SEPP
LOGIC
DET
COMP
1.6dB
DET
3dB
12dB AMP
SP
EP
EP. ON

■ TC4013BF 【TOSHIBA】
(Dual D-Type Flip Flop)


Q1
Q̄1
CLOCK1
RESET1
DATA1
SET1
VSS
VDD
Q2
Q̄2
CLOCK2
RESET2
DATA2
SET2

(TOP VIEW)

BLOCK DIAGRAM

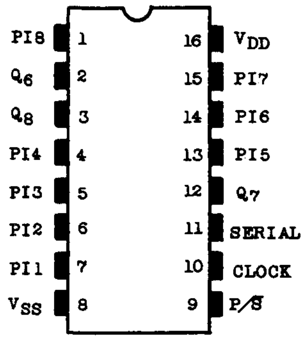

6
8
5
3
4
9
11
10
1
2
13
12
S
D
Q
CL
Q̄
R

TRUTH TABLE

INPUTS				OUTPUTS	
RESET	SET	DATA	CLOCK △	Qn+1	Q̄n+1
L	H	✱	✱	H	L
H	L	✱	✱	L	H
H	H	✱	✱	H	H
L	L	L	_┌	L	H
L	L	H	_┌	H	L
L	L	✱	┐_	Qn•	Q̄n•

✱ : Don't Care
△ : Level Change
• : No Change

■ TC4021BF 【TOSHIBA】
(8 Stage Static Shift Register)


PI8
Q6
Q8
PI4
PI3
PI2
PI1
VSS
VDD
PI7
PI6
PI5
Q7
SERIAL IN
CLOCK
P/S̄

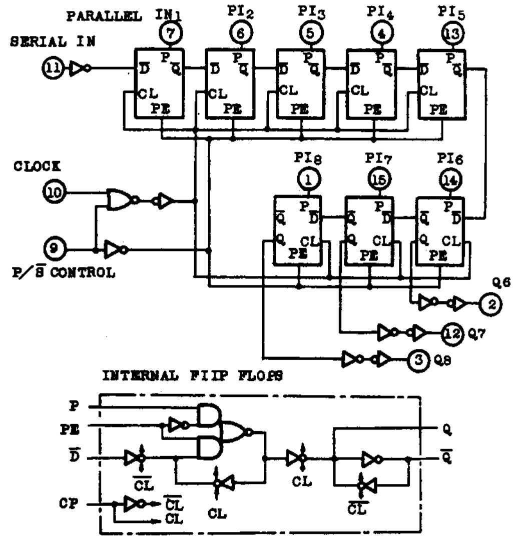
(TOP VIEW)

TRUTH TABLE

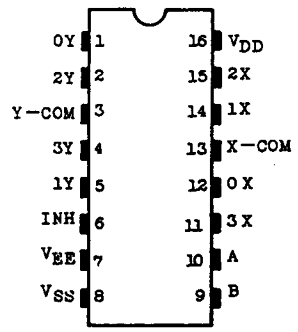
INPUTS					OUTPUTS △	
CLOCK ΔΔ	P/S̄	PI1	PIn	SI	Q1	Qn
_┌	L	※	※	L	L	Qn−1
_┌	L	※	※	H	H	Qn−1
┐_	L	※	※	※	No Change	
※	H	L	L	※	L	L
※	H	L	H	※	L	H
※	H	H	L	※	H	L
※	H	H	H	※	H	H

n ; 2 ~ 8
△ ; Q1 ~ Q5 Internal
ΔΔ ; Level
※ ; Don't Care

LOGIC DIAGRAM


PARALLEL IN1
PI2
PI3
PI4
PI5
SERIAL IN
CLOCK
P/S̄ CONTROL
PI8
PI7
PI6
Q6
Q7
Q8
INTERNAL FLIP FLOPS
P
PE
D̄
CP
Q
Q̄
CL
C̄L̄

■ TC4052BF 【TOSHIBA】
(Dual 4 Channel Analog Multiplexers/ Demultiplexers)


0Y
2Y
Y−COM
3Y
1Y
INH
VEE
VSS
VDD
2X
1X
X−COM
0X
3X
A
B

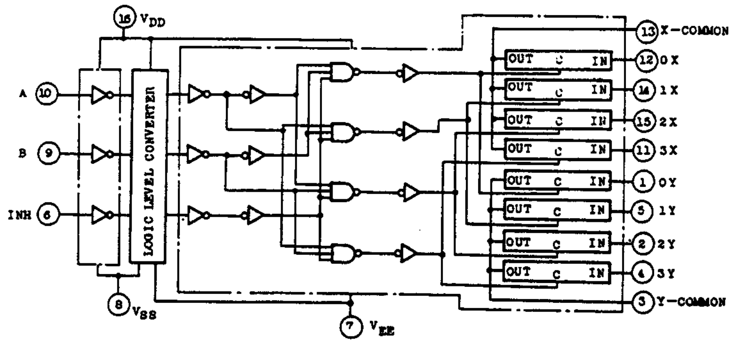
(TOP VIEW)

TRUTH TABLE

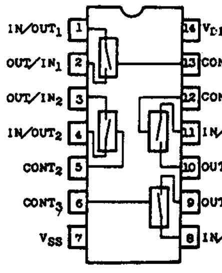
CONTROL INPUTS			"ON" CHANNEL
INHIBIT	B	A	TC4052BP TC4052BF
L	L	L	0X、0Y
L	L	H	1X、1Y
L	H	L	2X、2Y
L	H	H	3X、3Y
L	L	L	—
L	L	H	—
L	H	L	—
L	H	H	—
H	※	※	NONE

※ Don' t Care

LOGIC DIAGRAM


VDD
A
B
INH
LOGIC LEVEL CONVERTER
VSS
VEE
X−COMMON
0X
1X
2X
3X
0Y
1Y
2Y
3Y
Y−COMMON
OUT
IN

■ TC4066BF 【TOSHIBA】
(Quad Bilateral Switch)

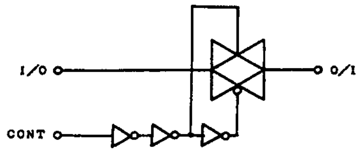

IN/OUT1
OUT/IN1
OUT/IN2
IN/OUT2
CONT2
CONT3
VSS
VDD
CONT1
CONT4
IN/OUT4
OUT/IN4
OUT/IN3
IN/OUT3

(TOP VIEW)

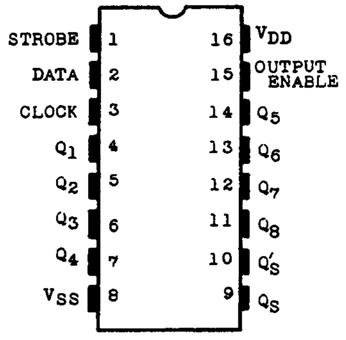
TRUTH TABLE

CONTROL	Impedance Between IN/OUT-OUT/IN ✱
H	0.5~5×10²Ω
L	>10⁹Ω

LOGIC DIAGRAM



■ TC4094BF 【TOSHIBA】
(8 Stage Bus Compatible Shift/Store Register)


STROBE
DATA
CLOCK
Q1
Q2
Q3
Q4
VSS
VDD
OUTPUT ENABLE
Q5
Q6
Q7
Q8
Q′S
QS

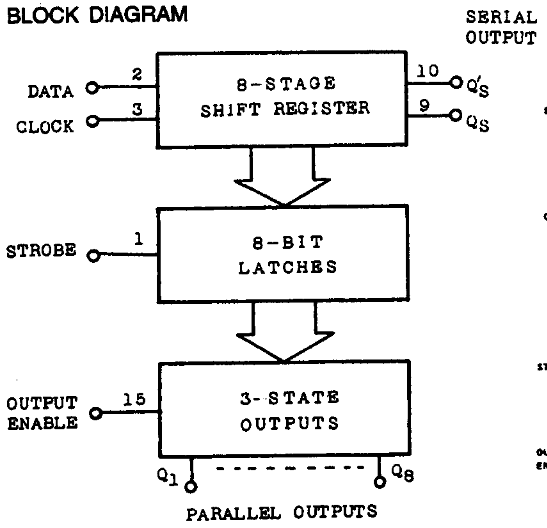
(TOP VIEW)

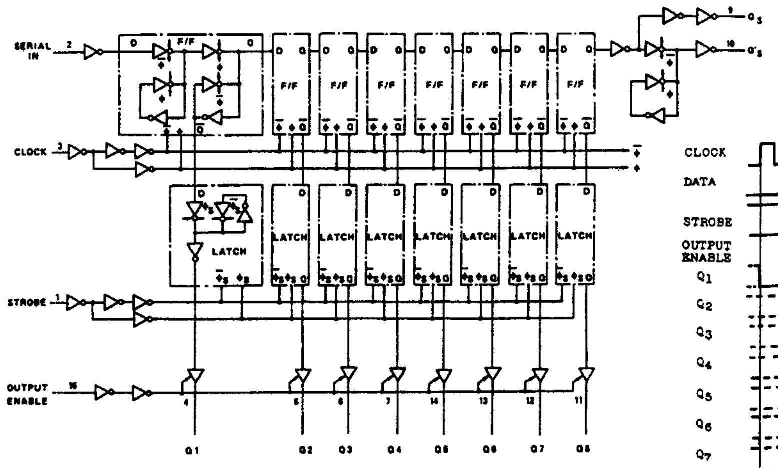
TRUTH TABLE

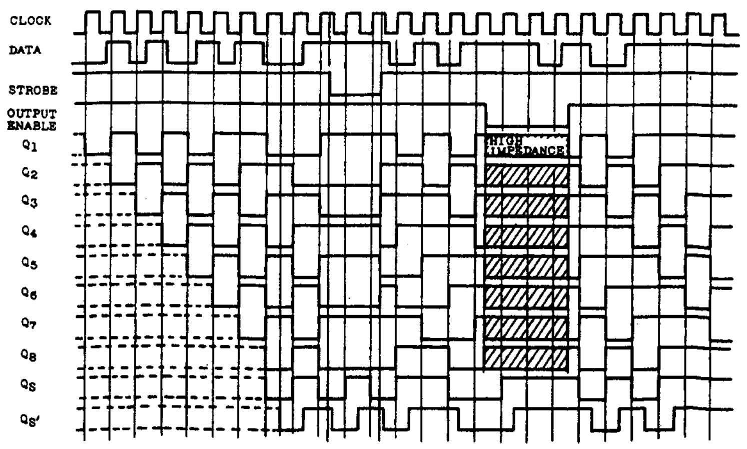
CL	OE	ST	D	PO		SO	
				Q1	Qn	QS	Q′S
_┌	H	H	L	L	Qn−1	Q7	NC
_┌	H	H	H	H	Qn−1	Q7	NC
_┌	H	L	✱	NC	NC	Q7	NC
_┌	L	✱	✱	HZ	HZ	Q7	NC
┐_	H	✱	✱	NC	NC	NC	QS
┐_	L	✱	✱	HZ	HZ	NC	QS

CL = Clock
OE = Output Enable
ST = Strobe
D = Data
PO = Parallel Outputs
SO = Serial Output
✱ = Don't care
NC = No Change
HZ = High Impedance

BLOCK DIAGRAM

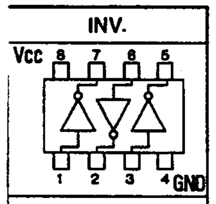

SERIAL OUTPUT
DATA
CLOCK
2
3
10
9
Q′S
QS
8-STAGE SHIFT REGISTER
STROBE
1
8-BIT LATCHES
OUTPUT ENABLE
15
3-STATE OUTPUTS
Q1
Q8
PARALLEL OUTPUTS


SERIAL IN
CLOCK
STROBE
OUTPUT ENABLE
F/F
LATCH
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
QS
Q′S



■ TC7W04F 【TOSHIBA】
(Triple Inverter Gate)

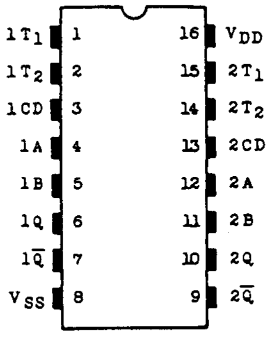
INV.


Vcc
8
7
6
5
1
2
3
4
GND

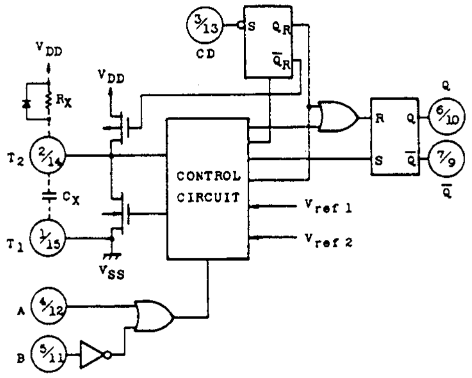
TC7W04F

TC74HC04AP / F

■ TC4538BF 〔TOSHIBA〕
(Dual Precision Monostable Multivibrator)


1T1 1
1T2 2
1CD 3
1A 4
1B 5
1Q 6
1Q̄ 7
VSS 8
16 VDD
15 2T1
14 2T2
13 2CD
12 2A
11 2B
10 2Q
9 2Q̄

(TOP VIEW)

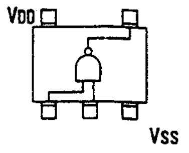

VDD
RX
VDD
T2
CX
T1
VSS
CONTROL CIRCUIT
Vref 1
Vref 2
CD
S
R
Q
Q̄
A
B

TRUTH TABLE

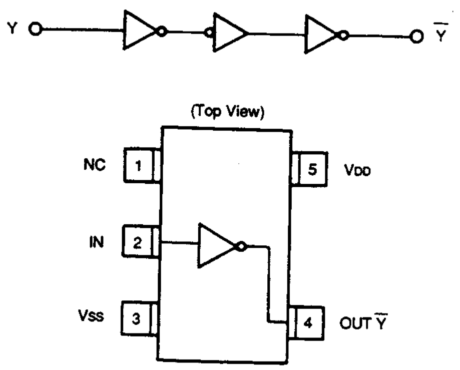
INPUT			OUTPUT		NOTE
A	B	CD	Q	Q̄	
↑	H	H	⊓	⊔	OUTPUT ENABLE
↑	L	H	L	H	INHIBIT
H	↓	H	L	H	INHIBIT
L	↓	H	⊓	⊔	OUTPUT ENABLE
*	*	L	L	H	INHIBIT

* Don't Care

■ TC4S11F 〔TOSHIBA〕
(2 Input Single NAND Gate)

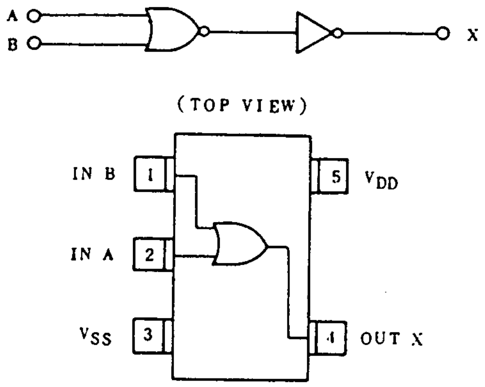


■ TC4S69F 〔TOSHIBA〕
(Inverter Gate)

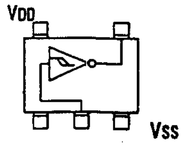

Y
Ȳ
(Top View)
NC 1
IN 2
Vss 3
5 VDD
4 OUT Ȳ

■ TC4S71F 〔TOSHIBA〕
(2-Input OR Gate)

X = A + B

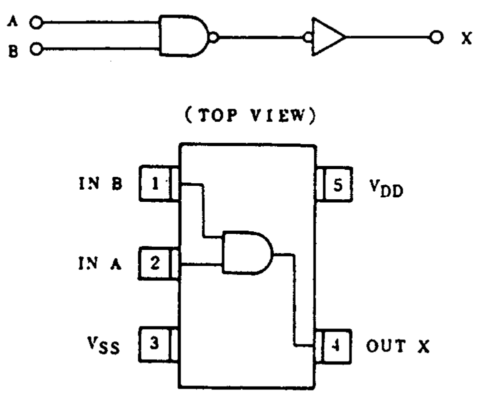

A
B
X
(TOP VIEW)
IN B 1
IN A 2
VSS 3
5 VDD
4 OUT X

■ TC4S584F 〔TOSHIBA〕
(Schmitt Triggerd Single Inverte Gate)

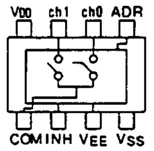
Schmitt Trigger

TC4S584F
CA
TC4584B

■ TC4S81F 〔TOSHIBA〕
(2-Input AND Gate)

X = A · B


A
B
X
(TOP VIEW)
IN B 1
IN A 2
VSS 3
5 VDD
4 OUT X

■ TC4W53F 〔TOSHIBA〕
(2-Channel Multiplexer)

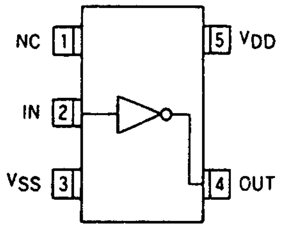

VDD ch1 ch0 ADR
COM INH VEE VSS

■ TC74HC4094AF 〔TOSHIBA〕
(Refer to TC4094BF.)

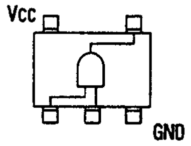
■ TC74HCU04AF 〔TOSHIBA〕
(Refer to MC74HC04AF.)

■ TC7S04F 〔TOSHIBA〕
(Invertor)

Pin arangement

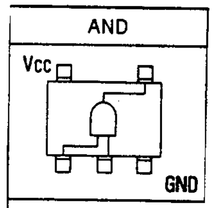

NC 1
IN 2
VSS 3
5 VDD
4 OUT

■ TC7S08F 〔TOSHIBA〕
(2 Input Single AND Gate)

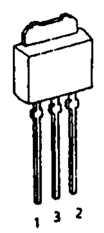


TRUE Table

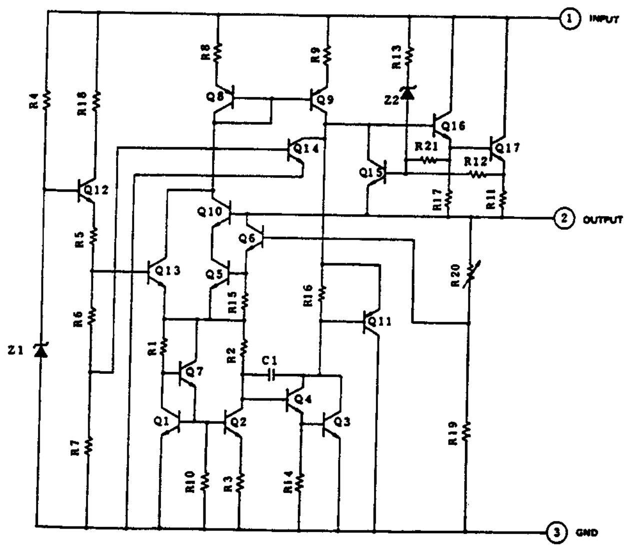
A	B	X
L	L	L
L	H	L
H	L	L
H	H	H

AND

TC7S08F
E2
TC74HC08

■ TA7805F 〔TOSHIBA〕
(3-Terminal Positive Voltage Regulator (+5V))



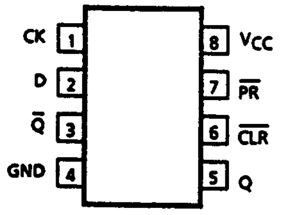
1. INPUT
2. OUTPUT
3. GND

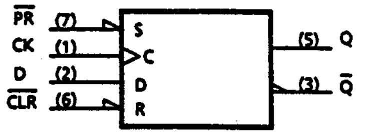

① INPUT
② OUTPUT
③ GND
R4
R18
R8
R9
R13
Z2
Q8
Q9
Q16
Q17
Q14
R21
R12
Q15
Q12
R17
R11
Q10
Q6
R5
Q13
Q5
R20
R16
R15
Q11
R6
Z1
R1
Q7
R2
C1
Q4
Q1
Q2
Q3
R7
R19
R10
R3
R14

■ TC7SU04F 〔TOSHIBA〕
(Refer to TC7S04F.)

■ TC7WH74FU 〔TOSHIBA〕
(D-Q Flip-Flop with Preset and Clear)

(TOP VIEW)


CK 1
D 2
Q̄ 3
GND 4
8 Vcc
7 P̄R̄
6 C̄L̄R̄
5 Q

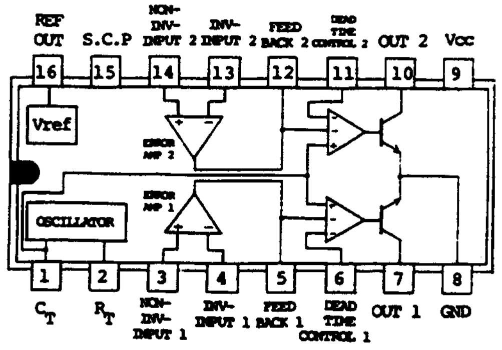

P̄R̄ (7)
CK (1)
D (2)
C̄L̄R̄ (6)
S
C
D
R
(5) Q
(3) Q̄

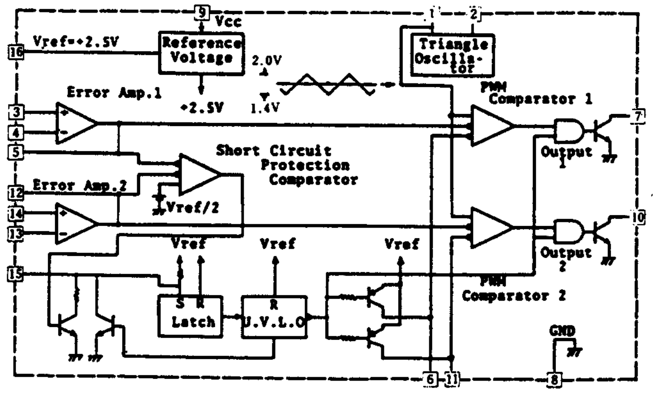
TRUE Table

INPUTS				OUTPUTS		FUNCTION
C̄L̄R̄	P̄R̄	D	CK	Q	Q̄	
L	H	×	×	L	H	CLEAR
H	L	×	×	H	L	PRESET
L	L	×	×	H	H	—
H	H	L	↑	L	H	—
H	H	H	↑	H	L	—
H	H	×	↓	Q_n	$\overline{Q}_n$	NO CHANGE

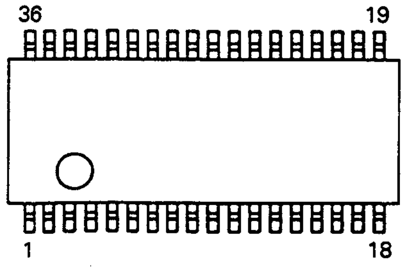
× : Don't care

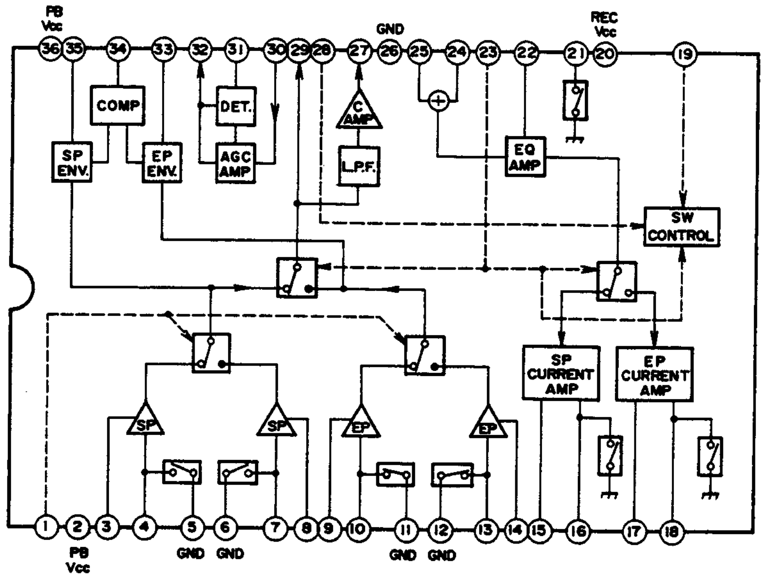
■ TL1451CNS 〔TEXAS〕
(Dual Switching Regulator Controller)


REF OUT
S.C.P
NON-INV-INPUT 2
INV-INPUT 2
FEED BACK 2
DEAD TIME CONTROL 2
OUT 2
Vcc
16 15 14 13 12 11 10 9
Vref
ERROR AMP 2
ERROR AMP 1
OSCILLATOR
1 2 3 4 5 6 7 8
CT
RT
NON-INV-INPUT 1
INV-INPUT 1
FEED BACK 1
DEAD TIME CONTROL 1
OUT 1
GND


9 Vcc
1 2
Vref=+2.5V
Reference Voltage
2.0V
Triangle Oscillator
PWM Comparator 1
Error Amp.1
+2.5V
1.4V
Short Circuit Protection Comparator
Error Amp.2
Vref/2
Output 1
Output 2
PWM Comparator 2
Vref
S R Latch
R U.V.L.O
GND
16 3 4 5 12 14 13 15 6 11 7 10 8

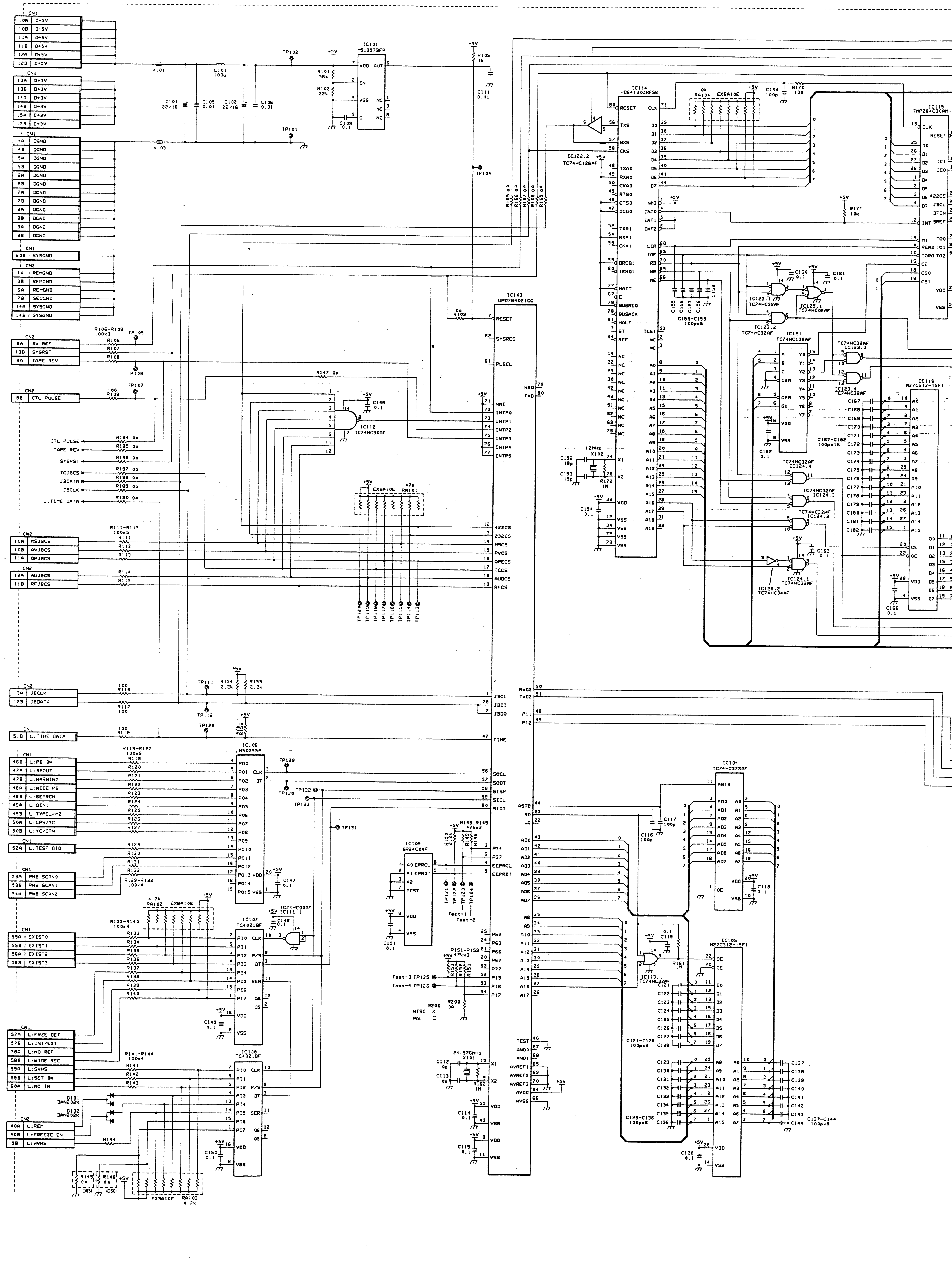
■ UPC2320GS 〔NEC〕
(Head Amp.)



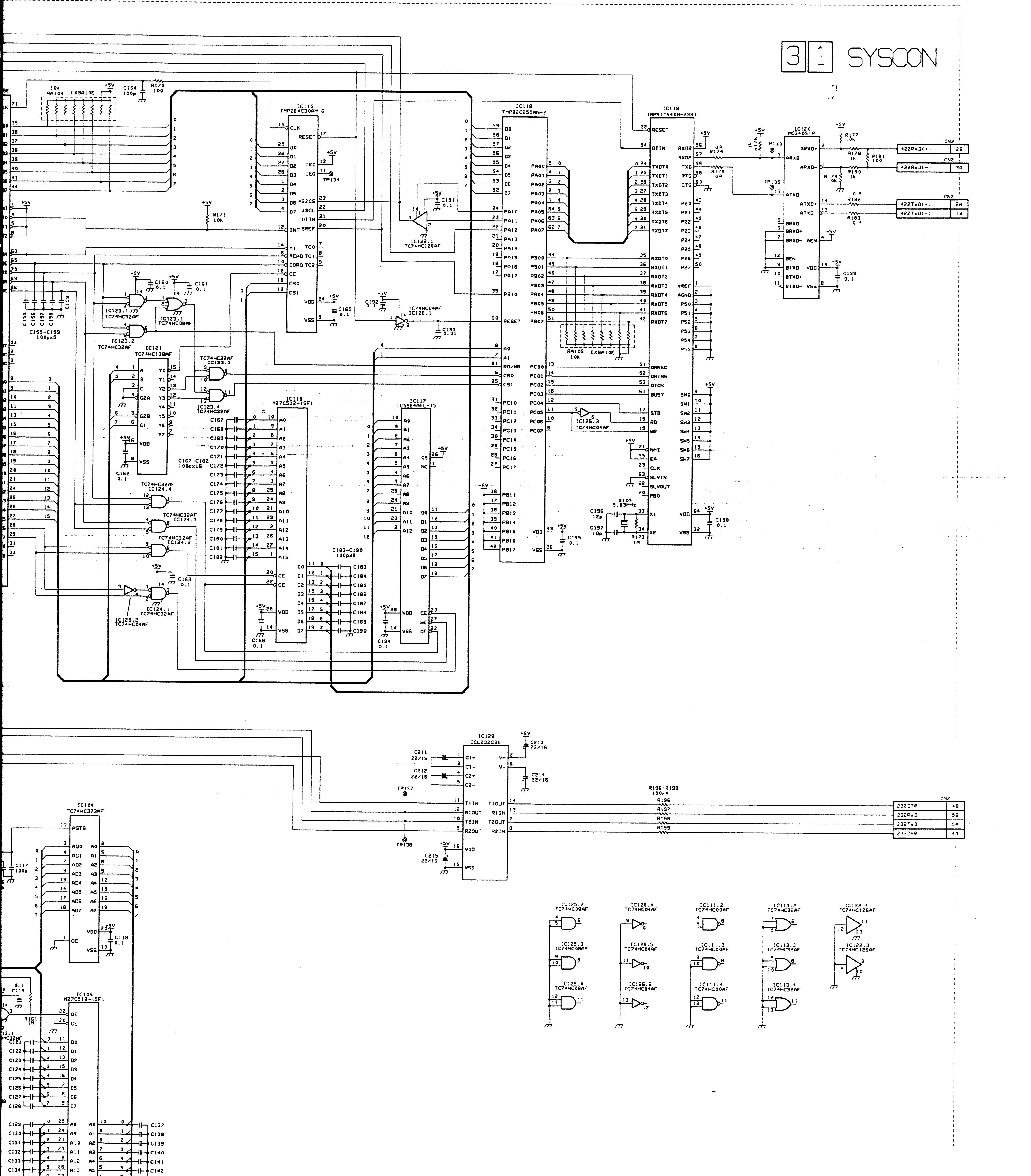

PB Vcc
GND
REC Vcc
36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19
COMP
DET.
C AMP
SP ENV.
EP ENV.
AGC AMP
L.P.F.
EQ AMP
SW CONTROL
SP
EP
SP CURRENT AMP
EP CURRENT AMP
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
PB Vcc
GND GND
GND GND

4.45 SYS/TC SCHEMATIC DIAGRAMS

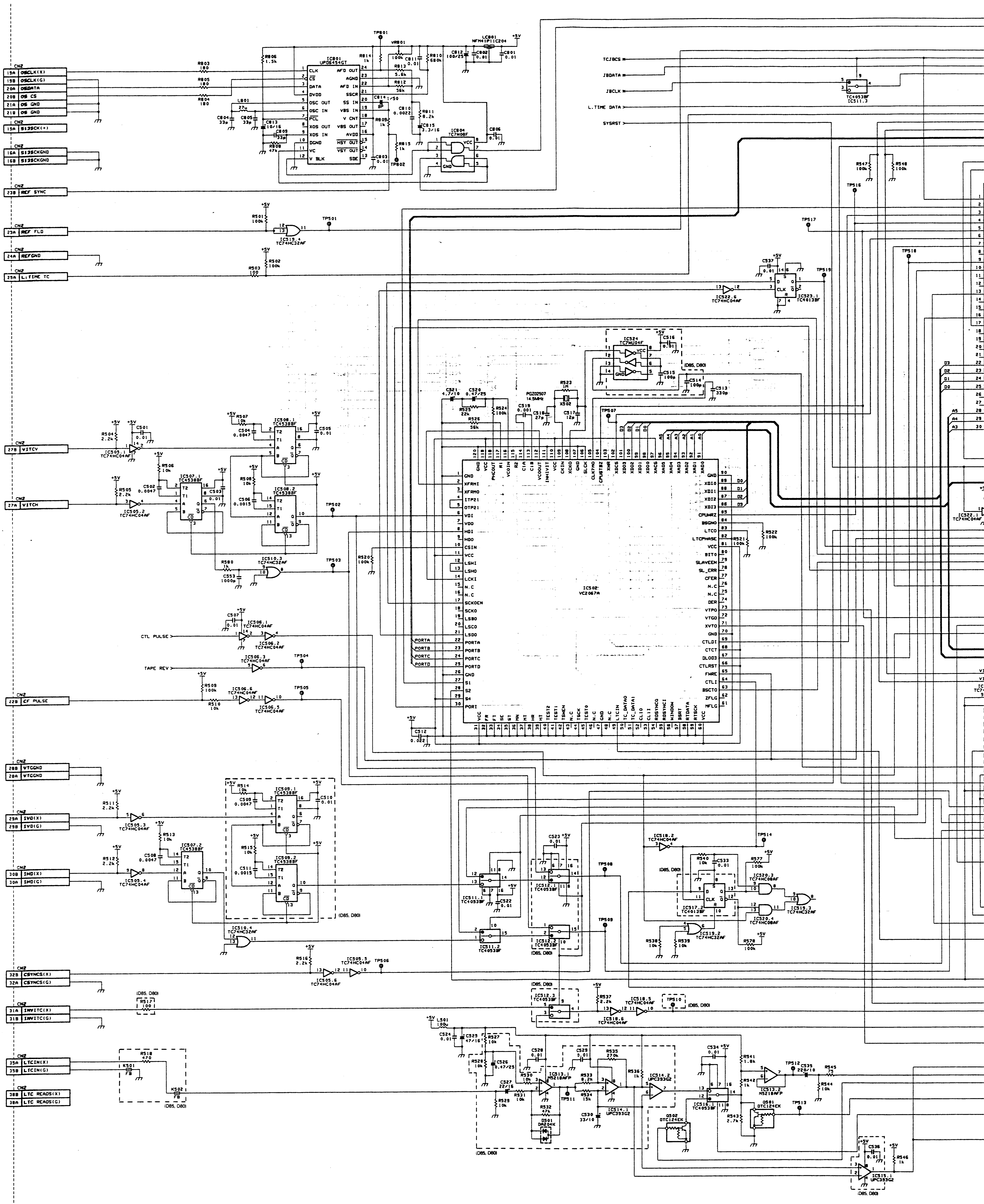
— DIAGRAM 1/2 —

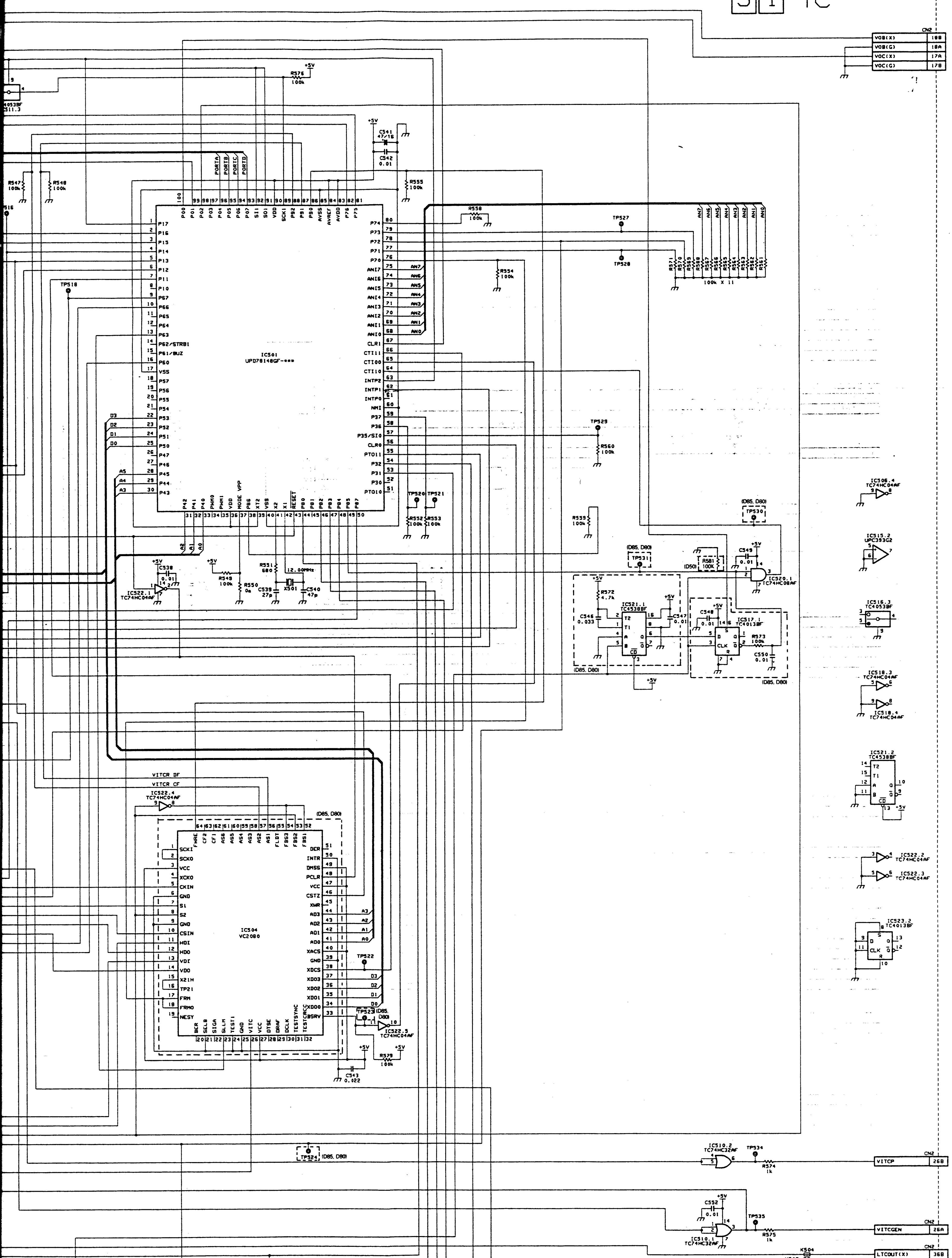

CN1
CN2
IC101 M51957BFP
IC103 UPD784021GC
IC106 M50255P
IC107 TC4021BF
IC108 TC4021BF
IC109 BR24C04F
IC112 TC74HC30AF
IC114 HD64180ZRFS8
IC115 TMPZ84C30AM
IC116 M27C512-15F1
IC104 TC74HC373AF
IC105 M27C512-15F1
IC121 TC74HC138AF
IC122.2 TC74HC126AF
IC123.1 TC74HC32AF
IC123.2 TC74HC32AF
IC123.3 TC74HC32AF
IC123.4 TC74HC32AF
IC124.1 TC74HC32AF
IC124.2 TC74HC32AF
IC124.3 TC74HC32AF
IC124.4 TC74HC32AF
IC125.1 TC74HC08AF
IC126.2 TC74HC04AF
IC111.1 TC74HC00AF
IC113.1 TC74HC32AF
RA101 EXBA10E 47k
RA102 EXBA10E 4.7k
RA103 EXBA10E 4.7k
RA104 EXBA10E 10k
X101 24.576MHz
X102 12MHz
D101 DAN202K
D102 DAN202K
CTL PULSE
TAPE REV
SYSRST
TCJBCS
JBDATA
JBCLK
L.TIME DATA
NTSC
PAL
Test-1
Test-2
Test-3 TP125
Test-4 TP126

3 1 SYSCON

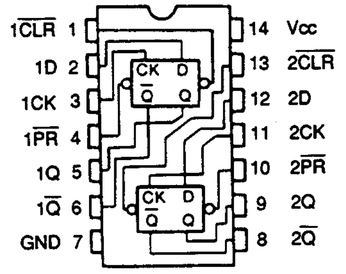

IC115 TMPZ84C30AM-6
IC118 TMP82C255AN-2
IC119 TMP91C640N-2381
IC120 MC34051P
IC116 M27C512-15F1
IC117 TC5564AFL-15
IC121 TC74HC138AF
IC122.1 TC74HC126AF
IC123.1 TC74HC32AF
IC123.2 TC74HC32AF
IC123.3 TC74HC32AF
IC123.4 TC74HC32AF
IC124.1 TC74HC32AF
IC124.2 TC74HC32AF
IC124.3 TC74HC32AF
IC124.4 TC74HC32AF
IC125.1 TC74HC08AF
IC126.1 TC74HC04AF
IC126.2 TC74HC04AF
IC126.3 TC74HC04AF
IC129 ICL232C9E
IC104 TC74HC373AF
IC105 M27C512-15F1
RA104 EXBA10E 10k
RA105 EXBA10E 10k
X103 9.83MHz
C155-C159 100px5
C167-C182 100px16
C183-C190 100px8
C137-C144 100px8
R196-R199 100x4
TP134
TP135
TP136
TP137
TP138
CN2
422RxD(+) 2B
422RxD(-) 3A
422TxD(+) 2A
422TxD(-) 1B
232DTR 4B
232RxD 5B
232TxD 5A
232DSR 4A
IC125.2 TC74HC08AF
IC125.3 TC74HC08AF
IC125.4 TC74HC08AF
IC126.4 TC74HC04AF
IC126.5 TC74HC04AF
IC126.6 TC74HC04AF
IC111.2 TC74HC00AF
IC111.3 TC74HC00AF
IC111.4 TC74HC00AF
IC113.2 TC74HC32AF
IC113.3 TC74HC32AF
IC113.4 TC74HC32AF
IC122.4 TC74HC126AF
IC122.3 TC74HC126AF
+5V

— DIAGRAM 2/2 —


CN2
15A OSCLK(X)
15B OSCLK(G)
20A OSDATA
20B OS CS
21A OS GND
21B OS GND
15A S13SCK(+)
16A S13SCKGND
16B S13SCKGND
23B REF SYNC
23A REF FLD
24A REFGND
25A L.TIME TC
27B VITCV
27A VITCH
22B CF PULSE
28B VTCGND
28A VTCGND
29A IVD(X)
29B IVD(G)
30B IMD(X)
30A IMD(G)
32B CSYNCS(X)
32A CSYNCS(G)
31A INVITC(X)
31B INVITC(G)
35A LTCIN(X)
35B LTCIN(G)
38B LTC READS(X)
38A LTC READS(G)
IC801 UPD6454GT
IC804 TC7W08F
IC502 VC2067A
IC524 TC7MU04F
IC511.3 TC4053BF
IC523.1 TC4013BF
IC522.6 TC74HC04AF
IC519.4 TC74HC32AF
IC508.1 TC4538BF
IC508.2 TC4538BF
IC507.1 TC4538BF
IC507.2 TC4538BF
IC509.1 TC4538BF
IC509.2 TC4538BF
IC505.1 TC74HC04AF
IC505.2 TC74HC04AF
IC505.3 TC74HC04AF
IC505.4 TC74HC04AF
IC505.5 TC74HC04AF
IC505.6 TC74HC04AF
IC506.1 TC74HC04AF
IC506.2 TC74HC04AF
IC506.3 TC74HC04AF
IC506.5 TC74HC04AF
IC506.6 TC74HC04AF
IC510.3 TC74HC32AF
IC510.4 TC74HC32AF
IC511.1 TC4053BF
IC511.2 TC4053BF
IC512.1 TC4053BF
IC512.2 TC4053BF
IC512.3 TC4053BF
IC517.2 TC4013BF
IC518.2 TC74HC04AF
IC518.5 TC74HC04AF
IC518.6 TC74HC04AF
IC519.2 TC74HC32AF
IC519.3 TC74HC32AF
IC520.3 TC74HC08AF
IC520.4 TC74HC08AF
IC513.1 NJM2100M
IC513.2 M5218AFP
IC514.1 UPC393G2
IC514.2 UPC393G2
IC515.1 UPC393G2
IC516.1 TC4053BF
Q501 DTC124EK
Q502 DTC124EK
D501 DA204K
PGZ02507 14.5MHz
X502
LC801 NFM41P11C204
TCJBCS
JBDATA
JBCLK
L.TIME DATA
SYSRST
CTL PULSE
TAPE REV
TP501
TP502
TP503
TP504
TP505
TP506
TP507
TP508
TP509
TP510
TP511
TP512
TP513
TP514
TP516
TP517
TP518
TP519
TP801
TP802
PORTA
PORTB
PORTC
PORTD
(D85, D80)
+5V


CN2
VOB(X) 19B
VOB(G) 18A
VOC(X) 17A
VOC(G) 17B
IC501
UPD78148GF-***
IC504
VC2080
R576 100k
C541 47/16
C542 0.01
R547 100k
R548 100k
R555 100k
R558 100k
TP527
TP528
TP518
TP529
R560 100k
R554 100k
100k X 11
AN7 AN6 AN5 AN4 AN3 AN2 AN1 AN0
PORTA PORTB PORTC PORTD
TP520 TP521
R552 100k
R553 100k
R559 100k
R551 680
12.00MHz
X501
C539 27p
C540 47p
R549 100k
R550 0Ω
C538 0.01
IC522.1 TC74HC04AF
(D85, D80)
TP530
TP531
R581 100k
(D50)
C549 0.01
IC520.1 TC74HC08AF
R572 4.7k
C546 0.033
IC521.1 TC4538BF
C547 0.01
C548 0.01
IC517.1 TC4013BF
R573 100k
C550 0.01
IC506.4 TC74HC04AF
IC515.2 UPC393G2
IC516.3 TC4053BF
IC518.3 TC74HC04AF
IC518.4 TC74HC04AF
IC521.2 TC4538BF
IC522.2 TC74HC04AF
IC522.3 TC74HC04AF
IC523.2 TC4013BF
VITCR DF
VITCR CF
IC522.4 TC74HC04AF
TP522
TP523
IC522.5 TC74HC04AF
R579 100k
C543 0.022
TP524
IC510.2 TC74HC32AF
TP534
R574 1k
VITCP 26B
C552 0.01
TP535
R575 1k
IC510.1 TC74HC32AF
VITCGEN 26A
K504 FB
K505 FB
LTCOUT(X) 36B
LTCOUT(G) 36A
IC516.2 TC4053BF
IC520.2 TC74HC08AF
TP526
TP525
C544 0.01
C545 0.01
IC518.1 TC74HC04AF
IC519.1 TC74HC32AF
C536 0.01
R546 1k
IC515.1 UPC393G2
4053BF
+5V

■ TC74HC74AF 【TOSHIBA】
(Dual D-Type Positive-EDGE-Triggered Flip-Flops with Preset AND Clear)


1CLR 1
1D 2
1CK 3
1PR 4
1Q 5
1Q 6
GND 7
14 Vcc
13 2CLR
12 2D
11 2CK
10 2PR
9 2Q
8 2Q
CK D
Q Q

(Top View)

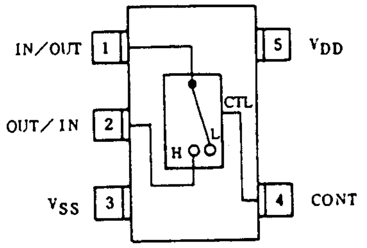
TRUE Table

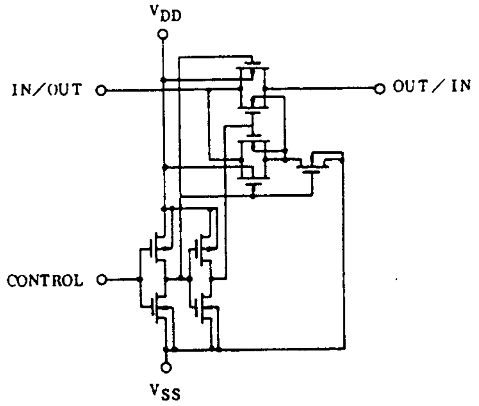
INPUTS				OUTPUTS		FUNCTION
$\overline{CLR}$	$\overline{PR}$	D	CK	Q	$\overline{Q}$	
L	H	X	X	L	H	CLEAR
H	L	X	X	H	L	PRESET
L	L	X	X	H	H	—
H	H	L	↑	L	H	—
H	H	H	↑	H	L	—
H	H	X	↓	Q_n	$\overline{Q}_n$	NO CHANGE

X : Don't care

■ TC4S66F 【TOSHIBA】
(Bilateral Switch)

(TOP VIEW)

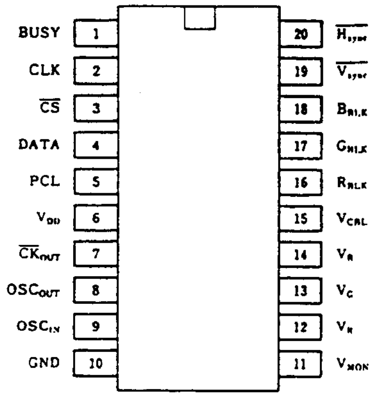

IN/OUT 1
OUT/IN 2
VSS 3
5 VDD
4 CONT
CTL
H
L


VDD
IN/OUT
OUT/IN
CONTROL
VSS

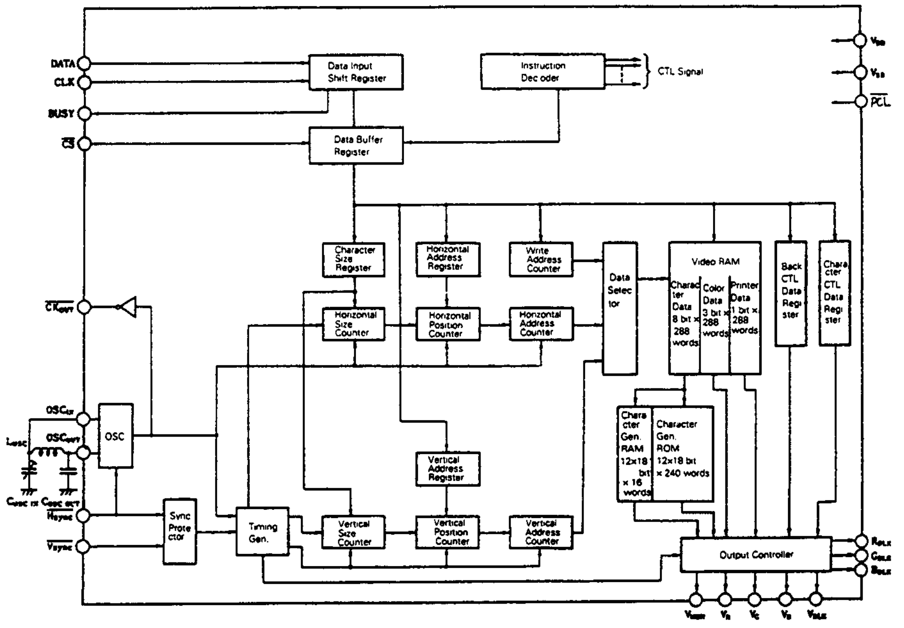
CONTROL	IMPEDANCE BETWEEN IN/OUT-OUT/IN ※
H	0.5 ~ 5 × 10² Ω
L	> 10⁹ Ω

※ See Electrical Characteristics

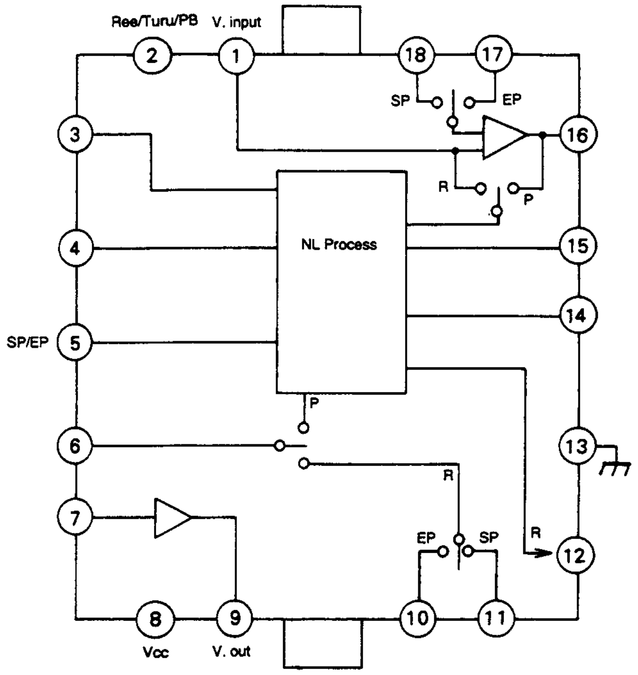
■ UPD6453GT-101 【NEC】
(On Screen Charactor Generator)


BUSY 1
CLK 2
CS 3
DATA 4
PCL 5
VDD 6
CKOUT 7
OSCOUT 8
OSCIN 9
GND 10
20 Hsync
19 Vsync
18 BBLK
17 GBLK
16 RBLK
15 VCRL
14 VR
13 VC
12 VR
11 VMON

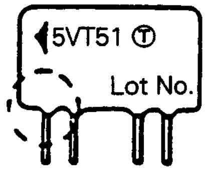
(TOP VIEW)

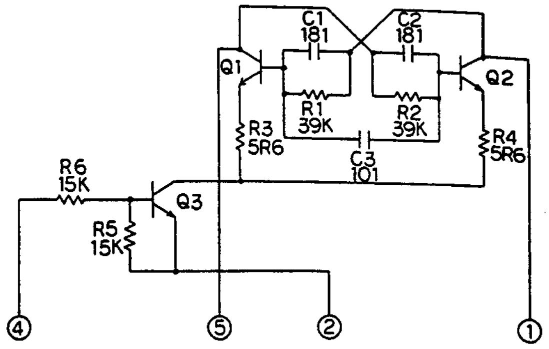

DATA
CLK
BUSY
CS
CKOUT
OSCIN
OSCOUT
Losc
Cosc IN
Cosc OUT
Hsync
Vsync
Data Input Shift Register
Instruction Decoder
CTL Signal
Data Buffer Register
Character Size Register
Horizontal Address Register
Write Address Counter
Data Selector
Video RAM
Character Data 8 bit × 288 words
Color Data 3 bit × 288 words
Printer Data 1 bit × 288 words
Back CTL Data Register
Character CTL Data Register
Horizontal Size Counter
Horizontal Position Counter
Horizontal Address Counter
Character Gen. RAM 12×18 bit × 16 words
Character Gen. ROM 12×18 bit × 240 words
Vertical Address Register
OSC
Sync Protector
Timing Gen.
Vertical Size Counter
Vertical Position Counter
Vertical Address Counter
Output Controller
VDD
VSS
PCL
RBLK
GBLK
BBLK
VMON
VR
VC
VB
VBLK

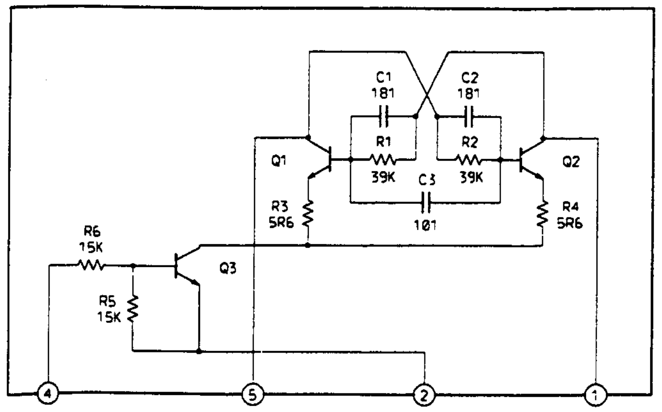
■ VC2076MP 【JVC】
(FM Signal Processer)


Ree/Turu/PB
V. input
SP/EP
Vcc
V. out
NL Process
SP
EP
R
P
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18

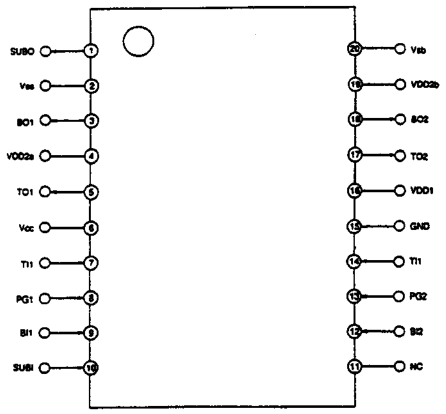
■ 5VT51 【JVC】
(Oscillator)


5VT51 Ⓣ
Lot No.


C1 181
C2 181
Q1
Q2
R1 39K
R2 39K
R3 5R6
R4 5R6
C3 101
R6 15K
R5 15K
Q3
④
⑤
②
①


C1 181
C2 181
R1 39K
R2 39K
C3 101
Q1
Q2
R3 5R6
R4 5R6
R6 15K
R5 15K
Q3
4
5
2
1

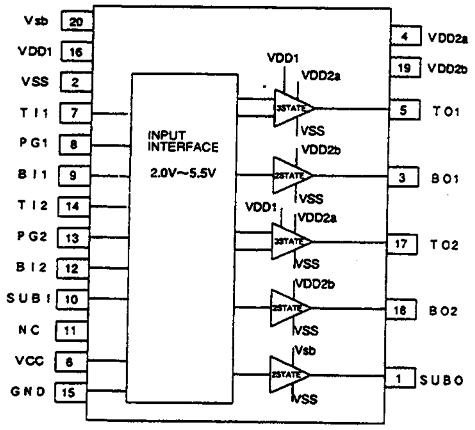
■ UPD16510GR 【NEC】
(Level Shifter)


SUBO 1
Vss 2
BO1 3
VDD2a 4
TO1 5
Vcc 6
TI1 7
PG1 8
BI1 9
SUBI 10
20 Vsb
19 VDD2b
18 BO2
17 TO2
16 VDD1
15 GND
14 TI1
13 PG2
12 BI2
11 NC

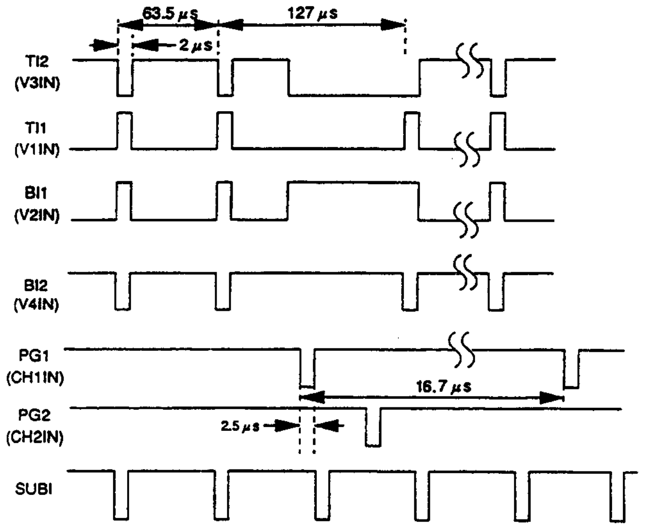
TOP VIEW

INPUT				OUTPUT		
TI1.2	PG	BI1.2	SUBI	TO1.2	BO1.2	SUBO
L	H	–	–	VMa	–	–
H	H	–	–	VL	–	–
L	L	–	–	VH	–	–
H	L	–	–	VL	–	–
–	–	L	–	–	VMb	–
–	–	H	–	–	VL	–
–	–	–	L			VL
–	–	–	H			VHH

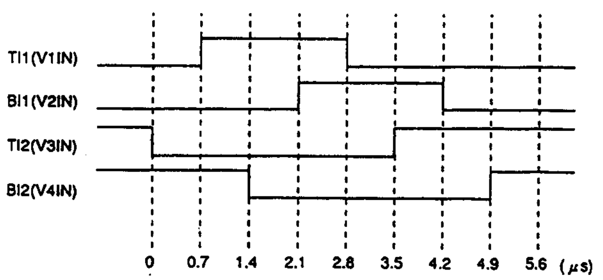
(VL=VSS、VMa=VDD2a、VMb=VDD2b、VH=VDD1、VHH=Vsb)


Vsb 20
VDD1 16
VSS 2
TI1 7
PG1 8
BI1 9
TI2 14
PG2 13
BI2 12
SUBI 10
NC 11
VCC 6
GND 15
INPUT INTERFACE
2.0V~5.5V
VDD1
VDD2a
VDD2b
VSS
Vsb
3STATE
2STATE
4 VDD2a
19 VDD2b
5 TO1
3 BO1
17 TO2
18 BO2
1 SUBO

INPUT PULSE TIMING CHART

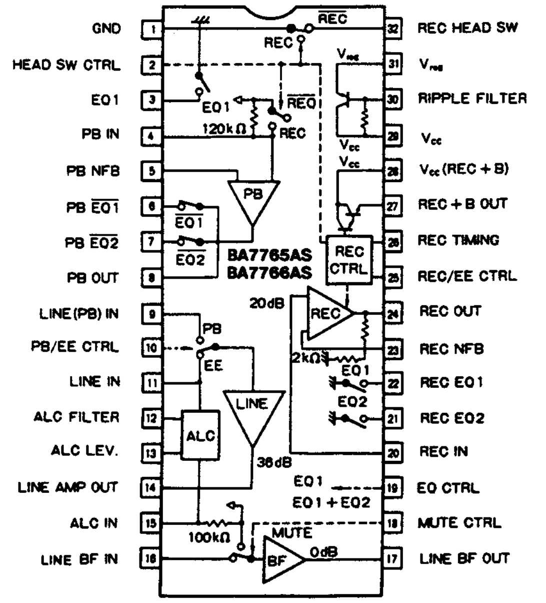


OVERLAP EXPANSION CHART



INPUT WAVE FORM

■ XRA7765AS 【ROHM】
(Normal Audio Signal Processor)

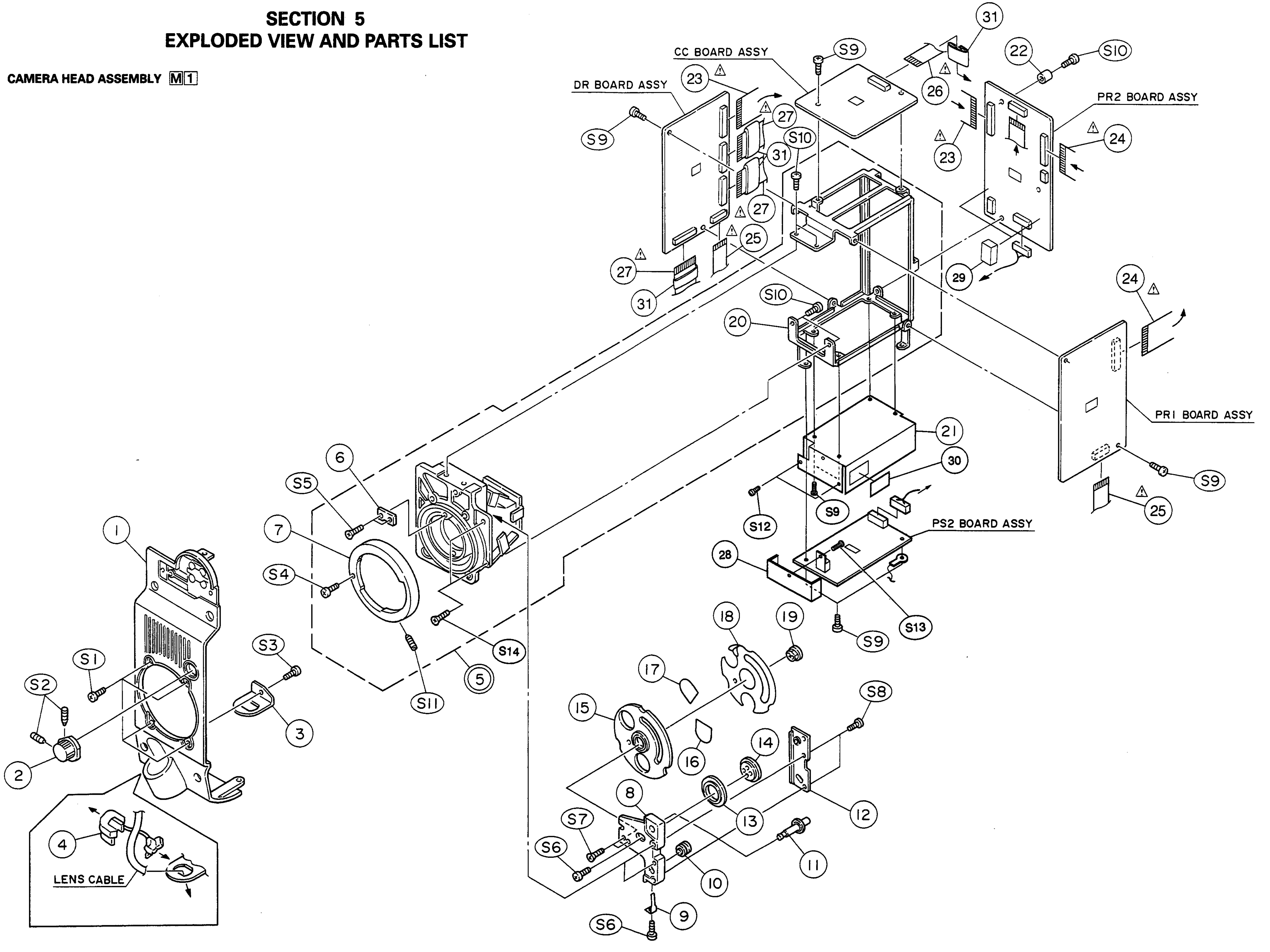

GND 1
HEAD SW CTRL 2
EO1 3
PB IN 4
PB NFB 5
PB EO1 6
PB EO2 7
PB OUT 8
LINE(PB) IN 9
PB/EE CTRL 10
LINE IN 11
ALC FILTER 12
ALC LEV. 13
LINE AMP OUT 14
ALC IN 15
LINE BF IN 16
32 REC HEAD SW
31 Vreg
30 RIPPLE FILTER
29 Vcc
28 Vcc (REC + B)
27 REC + B OUT
26 REC TIMING
25 REC/EE CTRL
24 REC OUT
23 REC NFB
22 REC EO1
21 REC EO2
20 REC IN
19 EQ CTRL
18 MUTE CTRL
17 LINE BF OUT
REC
EO1
REQ
120kΩ
PB
BA7765AS
BA7766AS
REC CTRL
20dB
2kΩ
EO2
PB
EE
LINE
ALC
36dB
EO1 + EO2
100kΩ
MUTE
BF
0dB

(TOP VIEW)

4-69

SECTION 5
EXPLODED VIEW AND PARTS LIST

5.1 CAMERA HEAD ASSEMBLY M1

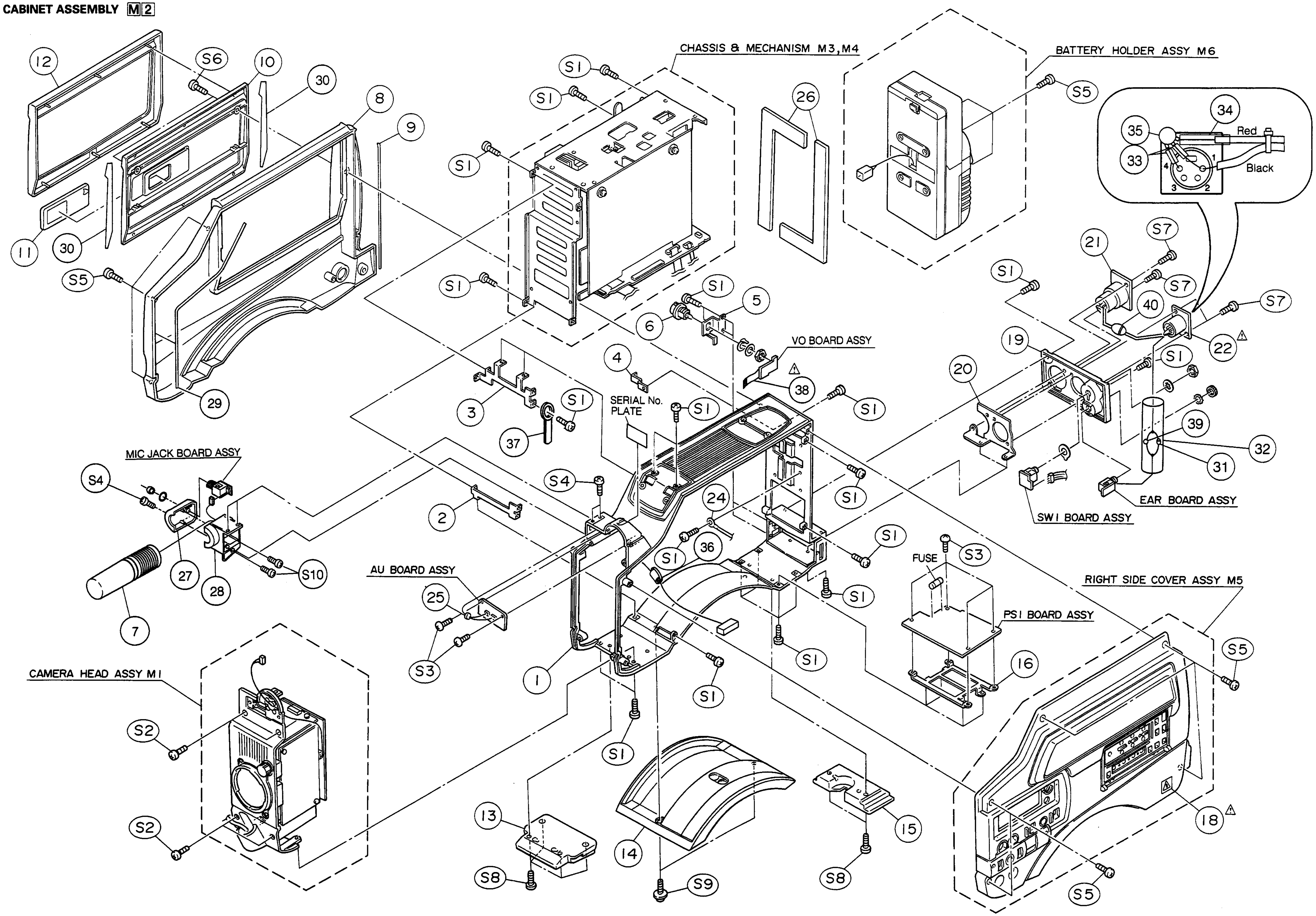

CC BOARD ASSY
DR BOARD ASSY
PR2 BOARD ASSY
PR1 BOARD ASSY
PS2 BOARD ASSY
LENS CABLE
S1
S2
S3
S4
S5
S6
S7
S8
S9
S10
S11
S12
S13
S14
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31

● CAMERA HEAD ASSEMBLY LIST M 1

M 1 M M ☐ ☐ ☐ ☐

Symbol No.	Part No.	Part Name	Description
1	SC10197-001	FRONT FRAME	
2	SC31323-013	FILTER KNOB	
3	SC45854-001	LENS BRACKET	
4	QHS6374-162	STRAIN RELIEF	
5	SCM0907-N0A	OPTICAL. BLOCK ASS'Y	For NTSC IS boards are included.
5	SCM0907-P0A	OPTICAL. BLOCK ASS'Y	For PAL IS boards are included.
6	SC45853-001	LENS PLATE	
7	SC32017-011	MOUNT RING	
8	SC31989-001	FILTER BASE	
9	SC45886-001	FILTER SPRING	
10	SC44482-002	STOPPER	
11	SC45847-001	FILTER SHAFT	
12	SC31991-001	FILTER COVER	
13	SC45845-001	FILTER I GEAR	
14	SC45846-001	FILTER I SHAFT	
15	SC31990-001	FILTER WHEEL	
16	SC45889-001	FILTER (2)	3200K + 6.3ND
17	SC45888-001	FILTER (1)	3200K
18	SC45887-001	FILTER SHEET	
19	SC45539-001	SHAFT	
20	SC20625-001	BASE BRACKET	
21	SC45905-011	SHIELD PLATE	
22	SS49917-009	SPACER	
⚠ 23	SCV2337-2008BD	FLAT CABLE	CN5 [PR2-DR]
⚠ 24	SCV2337-2004BD	FLAT CABLE	CN7 [PR2-PR1]
⚠ 25	SCV2337-1008BD	FLAT CABLE	CN4 [PR1-DR]
⚠ 26	SCV2337-1508BD	FLAT CABLE	CN8 [CC-PR2]
⚠ 27	SCV2337-1811BD	FLAT CABLE	CN1, 2, 3 [DR-IS]
28	SC45960-001	HEAT SINK	
29	SC45273-002	CUSHION 1	
30	SC45564-002	SHEET	
31	SCV2698-002	FERRITE CORE	
S1	SDSP3006M	SCREW	M3 × 6
S2	YRS2603M	SCREW	M2.6 × 3
S3	LPSP3006Z	SCREW	M3 × 6
S4	SDSP3008M	SCREW	M3 × 8
S5	SSSP2604M	SCREW	M2.6 × 4
S6	SPSK2025M	SCREW	M2 × 2.5
S7	SSSK2040M	SCREW	M2 × 40
S8	SPSK2050M	SCREW	M2 × 50
S9	LPSP2604Z	SCREW	M2.6 × 4
S10	SDSP2606R	SCREW	M2.6 × 6
S11	YRS3004M	SCREW	M3 × 3
S12	SDSP2606M	SCREW	M2.6 × 6
S13	SDSP3006R	SCREW	M3 × 6
S14	SSSK2050M	SCREW	M2 × 5

5.2 CABINET ASSEMBLY M2

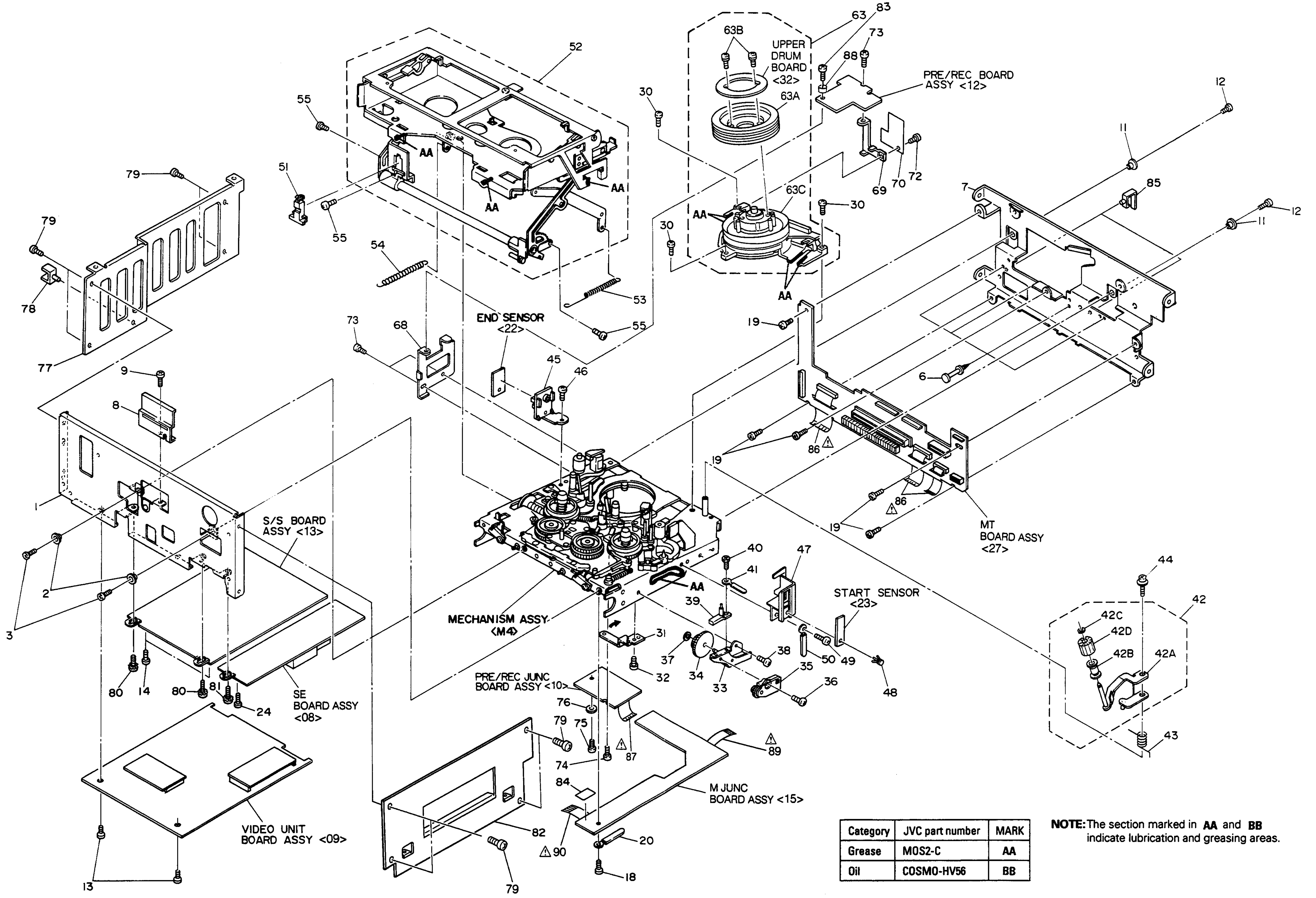

12
S6
10
30
8
9
11
30
S5
29
CHASSIS & MECHANISM M3,M4
S1
S1
S1
S1
26
BATTERY HOLDER ASSY M6
S5
34
35
Red
33
Black
4
1
3
2
21
S7
S7
S7
S1
40
22
6
S1
5
VO BOARD ASSY
38
4
3
37
S1
SERIAL No. PLATE
S1
S1
19
20
S1
39
32
31
MIC JACK BOARD ASSY
S4
S4
2
24
S1
S1
EAR BOARD ASSY
SW1 BOARD ASSY
27
28
S10
S1
36
S1
S3
FUSE
S1
RIGHT SIDE COVER ASSY M5
7
AU BOARD ASSY
25
PS1 BOARD ASSY
S5
S3
1
S1
S1
16
CAMERA HEAD ASSY M1
S2
S1
S2
13
14
15
18
S8
S9
S8
S5

- **CABINET ASSEMBLY LIST** M 2

M 2 M M ☐☐☐☐

Symbol No.	Part No.	Part Name	Description
1	SC10196-001	CENTER FRAME	
2	SC45859-002	FRONT BRACKET-B	
3	SC45858-002	FRONT BRACKET-A	
4	SC45860-002	L.SIDE BRACKET	
5	SC45862-002	BNC BRACKET	
6	CEMB006-00A	BNC CONNECTOR	
7	SCV2688-001	MIC ASSY	
8	SC10200-031	L.SIDE COVER	
9	SC45909-165	TUBE	
10	SC20624-011	CASSETE PANEL	
11	SC45912-003	WINDOW	U version
11	SC45912-004	WINDOW	E version
12	SC32003-001	CASSETE COVER	
13	SC20479-002	FRONT BASE	
14	SC10202-001	SHOLDER PAD	
15	SC31335-011	REAR BASE	
16	SC45861-001	PS BRACKET	
⚠ 18	SC43948-001	CAUTION LABEL	
19	SC31994-001	CN COVER	
20	SC45863-001	CN BRACKET	
21	PGZ01953	XLR CONNECTOR	AUX INPUT
⚠ 22	PGZ01954	XLR CONNECTOR	DC INPUT
24	PU49485-3	WIRE CLAMP	
25	PU59191	BINDER	
26	SC45882-001	BH CUSHION	
27	SC31996-001	MIC COVER 2	
28	SC31995-001	MIC COVER 1	
29	SC45909-230	TUBE	
30	SC45953-001	CUSHION	
31	HZ3B1	ZENER DIODE	D1, HITACHI
32	QXT629H-035	TUBE	35mm
33	QXTE150-007	TUBE	
34	QXTE150-020	TUBE	
35	PGZ01161-223	EMI FILTER	
36	SCV2728-001	CLAMP FILTER	
37	PU49485-4	WIRE CLAMP	
⚠ 38	PGW0206-090100	FLAT CABLE	
39	QCZ0206-104	CER. CAPACITOR	C1, 0.1μ
40	HZ3B1	ZENNER DIODE	D2, HITACHI
S1	SDSP2604M	SCREW	M2.6×4
S2	SDSP3006M	SCREW	M3×6
S3	LPSP2606Z	SCREW	M2.6×6
S4	SPSK2050M	SCREW	M2×5
S5	SDSP3008M	SCREW	M3×8
S6	SDSP2605Z	SCREW	M2.6×5
S7	SDSP2608N	SCREW	M2.6×8
S8	SDSP3010M	SCREW	M3×10
S9	DPSP4006M	SCREW	M4×6
S10	SDSP2008M	SCREW	M2×8

5.3 CHASSIS ASSEMBLY M3


52
55
AA
51
55
79
79
78
77
54
53
55
END SENSOR
<22>
73
68
45
46
9
8
1
2
3
S/S BOARD
ASSY <13>
80
14
80
81
24
SE
BOARD ASSY
<08>
VIDEO UNIT
BOARD ASSY <09>
13
MECHANISM ASSY
<M4>
PRE/REC JUNC
BOARD ASSY <10>
76
79
75
74
87
84
90
82
79
20
18
M JUNC
BOARD ASSY <15>
89
30
63
83
63B
UPPER
DRUM
BOARD
<32>
63A
63C
88
73
PRE/REC BOARD
ASSY <12>
69
70
72
30
30
19
12
11
7
85
12
11
6
86
19
19
86
MT
BOARD ASSY
<27>
40
41
47
39
31
32
37
34
38
33
35
36
50
49
START SENSOR
<23>
48
44
42
42C
42D
42B
42A
43

Category	JVC part number	MARK
Grease	MOS2-C	AA
Oil	COSMO-HV56	BB

NOTE: The section marked in **AA** and **BB** indicate lubrication and greasing areas.

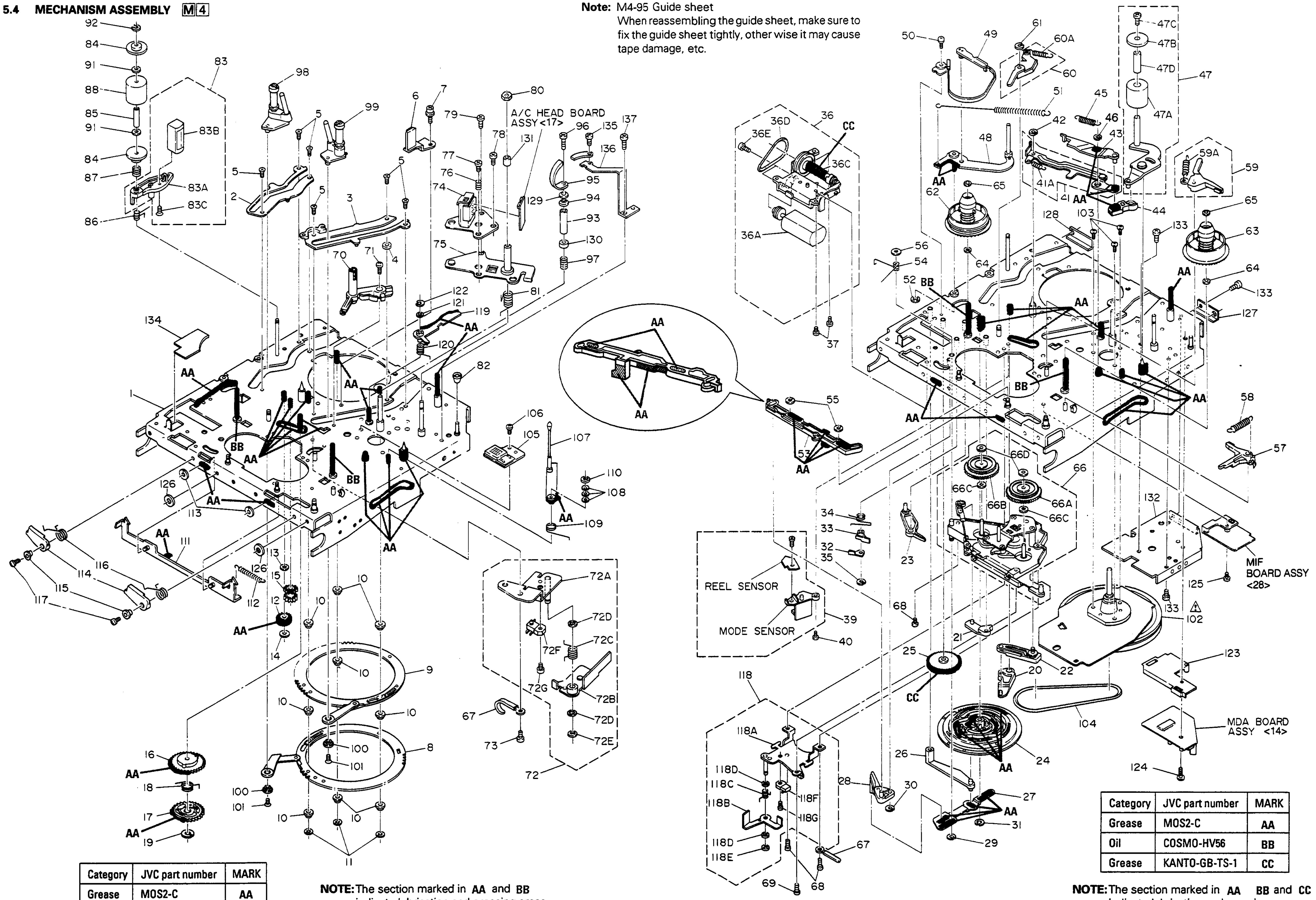
● CHASSIES ASSEMBLY LIST M 3

M 3 M M ☐☐☐☐

Symbol No.	Part No.	Part Name	Description
1	SC31999-002	FRAME (TOP)	
2	PRD43914-01-01	SPACER	
3	PRD30093	SPECIAL SCREW	
6	PU60010-3	SPACER	
7	SC32000-001	FRAME (BOTTOM)	
8	YQ41954-1-2	BRACKET (GUIDE)	
9	SDST2605Z	SCREW	M2.6 × 5
11	PRD43914-01-01	SPACER	
12	PRD30093	SPECIAL SCREW	
13	PRD44050-02	SCREW	
14	PRD44050-02	SCREW	
18	SDSP2606Z	SCREW	M2.6 × 6
19	SDST2605Z	SCREW	M2.6 × 5
20	PU49485-3	WIRE CLAMP	
24	PRD44050-02	SCREW	
30	SDSP2606Z	SCREW	M2.6 × 6
31	YU40548-1-1	BRUSH	
32	SDST2005Z	SCREW	M2 × 5
33	YQ40636A-3	DAMPER BRACKET ASS'Y	
34	YQ40298	DAMPER GEAR	
35	PU56781	DAMPER	
36	SDSP2006Z	SCREW	M2 × 6
37	PQM30017-23	SLIT WASHER	
38	SDST2606Z	SCREW	M2.6 × 6
39	YU40148-1-1	CASSETTE SWITCH	
40	SDSP2605Z	SCREW	M2.6 × 5
41	PU49485-3	WIRE CLAMP	
42	PRD43820A	CLEANER ARM ASS'Y	
42A	PRD43821A	CLEANER ARM SUB ASS'Y	
42B	PQ45689	ROLLER	
42C	PQM30017-38	SLIT WASHER	
42D	PQ44837	HEAD CLEANER	
43	PRD43718	TORSION SPRING	
44	DPSP2005Z	SCREW	M2 × 5
45	YQ30216-1-3	END SENSOR BRACKET	
46	SDST2605Z	SCREW	M2.6 × 5
47	PRD30845-01-02	START SENSOR BRACKET	
48	PU56800	NYLON RIVET	
49	SDST2606Z	SCREW	M2.6 × 6
50	PU49485-3	WIRE CLAMP	
51	PU56571	LEAF SWITCH,REC SAFETY	
52	PRD20469A	CASSETTE HOUSING	
53	YQM30001-27	TENSION SPRING	
54	PRD30024-66	TENSION SPRING	
55	SDST2606Z	SCREW	M2.6 × 6
63	PDR2013A	DRUM FINAL ASS'Y	NTSC
63	PDV2308A	DRUM FINAL ASS'Y	PAL
63A	PRD20443E	UPPER DRUM ASSY	NTSC
63A	PRD20443D	UPPER DRUM ASSY	PAL
63B	PDM4165A	DRUM SCREW	
63C	PRD20444B	LOWER DRUM MOTOR ASS'Y	
68	PRD44216	BRACKET(A)	
69	PRD44217	BRACKET(B)	
70	PRS40035-01-01	SHIELD PLATE	
72	LPSP2606Z	SCREW	M2.6 × 6
73	SDST2605Z	SCREW	M2.6 × 5
74	SDSP2606Z	SCREW	M2.6 × 6
75	DPSP2605Z	SCREW	M2.6 × 5
76	WBS2600N	LOCK WASHER	
77	SC32001-002	FRONT COVER	
78	PU56729-2	WIRE CLAMP	
79	SDSP2604Z	SCREW	M2.6 × 4
80	PRD44050-02	SCREW	
81	PRD44050-02	SCREW	
82	SC32002-002	REAR COVER	
83	SDST2614Z	SCREW	M2.6 × 14
84	PRD30030-113	PAD	
85	PGZ00452	L WIRE SADOLE	
⚠ 86	PGW0206-160240	FLAT CABLE	
⚠ 87	PGW0206-120110	FLAT CABLE	
88	SS49917-018	SPACER	
⚠ 89	PGW0206-040100	FLAT CABLE	
⚠ 90	PGW0206-040200	FLAT CABLE	

5.4 MECHANISM ASSEMBLY M4

Note: M4-95 Guide sheet
When reassembling the guide sheet, make sure to fix the guide sheet tightly, other wise it may cause tape damage, etc.


92
84
91
88
85
91
84
87
86
83
83B
83A
83C
98
99
5
2
3
4
6
7
79
80
A/C HEAD BOARD ASSY <17>
78
131
77
76
74
75
81
96
135
137
136
95
94
93
130
97
129
70
71
122
121
119
120
82
134
1
AA
BB
126
113
111
116
114
115
117
112
13
15
12
14
10
9
8
100
101
16
18
17
19
11
106
105
107
110
108
109
72A
72D
72C
72F
72G
72B
72E
72
67
73
36
36D
36E
36C
36A
37
CC
50
49
61
60A
60
51
45
46
43
42
48
41A
41
44
47C
47B
47D
47
47A
59A
59
65
62
63
64
133
127
128
103
56
54
52
55
53
58
57
66D
66
66C
66B
66A
34
33
32
35
23
132
MIF BOARD ASSY <28>
125
REEL SENSOR
MODE SENSOR
39
40
68
21
22
20
25
102
123
104
24
MDA BOARD ASSY <14>
124
118
118A
118D
118C
118B
118F
118G
118E
26
28
30
27
31
29
69

Category	JVC part number	MARK
Grease	MOS2-C	AA
Oil	COSMO-HV56	BB

NOTE: The section marked in **AA** and **BB** indicate lubrication and greasing areas.

Category	JVC part number	MARK
Grease	MOS2-C	AA
Oil	COSMO-HV56	BB
Grease	KANTO-GB-TS-1	CC

NOTE: The section marked in **AA** **BB** and **CC** indicate lubrication and greasing areas.

● MECHANISM ASSEMBLY LIST M4

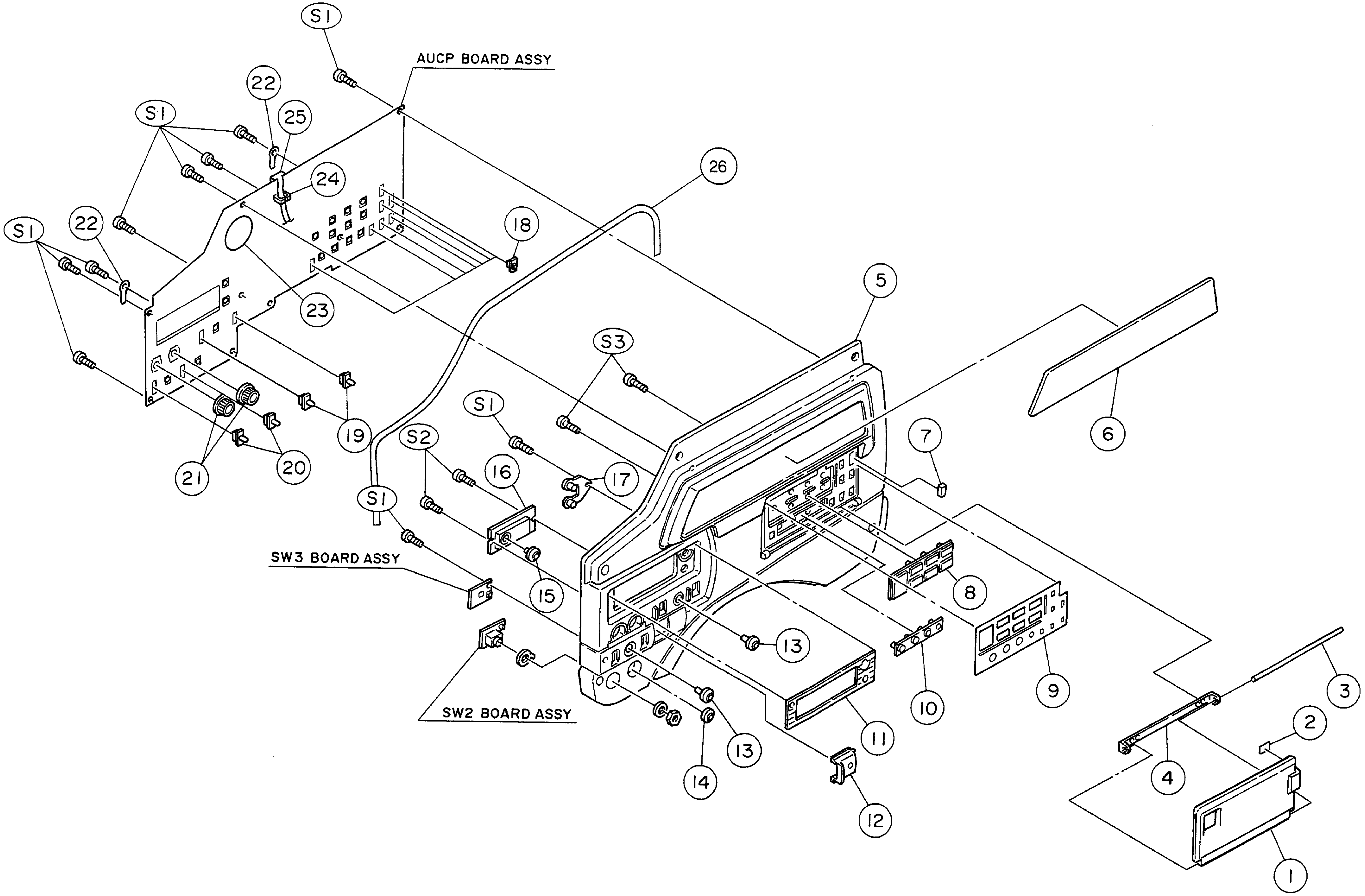
M4MM☐☐☐☐

Symbol No.	Part No.	Part Name	Description
1	PRD20418A-07	MAIN DECK ASS'Y	
2	YQ30569	GUIDE RAIL (S)	
3	YQ30487	GUIDE RAIL (T)	
4	Q03093-827	SPACER	
5	PQ41269-2	SPECIAL SCREW	
6	PRD30287-01-03	TAPE GUIDE	
7	SDSP2605Z	SCREW	M2.6×5
8	YQ41229A-1	LOADING RING ASS'Y (S)	
9	YQ41232A-1	LOADING RING ASS'Y (T)	
10	PQ42786	GUIDE ROLLER	
11	PQM30017-22	SLIT WASHER	
12	PQ40822	CONNECT GEAR 1	
13	Q03093-817	SPACER	
14	PQM30017-24	SLIT WASHER	
15	PQ40823	CONNECT GEAR 2	
16	PQ31597	LOADING GEAR 1	
17	PQ30337	LOADING GEAR 2	
18	PQ41069	TORSION SPRING	
19	PQM30017-18	SLIT WASHER	
20	PQ42787	CAM LEVER 1	
21	PQ40827	CAM LEVER 2	
22	PQ42788A	RELAY ARM ASS'Y	
23	PQ40831A-1	CANCEL LEVER ASS'Y	
24	PQ20235-1-3	CONTROL CAM	
25	PQ40833	WORM WHEEL	
26	PQ40834A	CANCEL LEVER 3 ASS'Y	
27	PQ40836-1-2	SLIDE PLATE	
28	PQ40837B	RELAY LEVER ASS'Y	
29	PQM30017-22	SLIT WASHER	
30	PQM30017-23	SLIT WASHER	
31	REE2500	E WASHER	
32	PQ41225-1-2	CAM BRAKE 1	
33	PQ41226	CAM BRAKE 2	
34	PQ41252-2-2	TORSION SPRING	
35	PQM30017-23	SLIT WASHER	
36	PGZ01830-02	MOTOR BRACKET ASS'Y	
36A	PGZ01939	LOADING MOTOR ASS'Y	
36C	PGZ01831-02	MOTOR BRACKET UNIT	
36D	PRD30022-19	LOADING BELT	
36E	SPSP2004M	SCREW	M2×4
37	SDST2605Z	SCREW	M2.6×5
39	PGS30043B	MODE SENSOR ASS'Y	
40	SDSP2605Z	SCREW	M2.6×5
41	YQ30489A-1	PINCH ROLLER PLATE ASS'Y	
41A	PQM30001-153	TENSION SPRING	
42	PQM30017-23	SLIT WASHER	
43	YQ41270A	TOGGLE ARM ASS'Y	
44	PQ40844	TOGGLE ARM 2	
45	YQ41237	TENSION SPRING	
46	REE2500	E RING	
47	PQ40874A-2	PINCH ROLLER ARM ASS'Y	
47A	PQ41125A	PINCH ROLLER ASS'Y	
47B	PU53878	PINCH ROLLER CAP	
47C	SPSP2005Z	SCREW	M2×5
47D	PQM30005-39	COLLAR	

Symbol No.	Part No.	Part Name	Description
48	PRD43771A-03	TENSION POLE ASS'Y	
49	PQ40851B	TENSION BAND ASS'Y	
50	SDSP2605Z	SCREW	M2.6×5
51	PRD44003	TENSION SPRING	
52	REE2000	E.RING	
53	PQ30269-2	CONTROL PLATE	
54	PRD44154	TORSION SPRING	
55	PQM30017-22	SLIT WASHER	
56	PQM30017-23	SLIT WASHER	
57	PQ40858B	SEARCH BRAKE ASS'Y	
58	PQM30001-222	TENSION SPRING	
59	PQ40860B-3	REW BRAKE ASS'Y	
59A	YQM30001-21-4	TENSION SPRING	
60	PRD44028A	FF BRAKE ASS'Y	
60A	PRD30024-61	TENSION SPRING	
61	PQM30017-24	SLIT WASHER	
62	PGZ01341	REEL DISK (S)	
63	PGZ01342	REEL DISK (T)	
64	Q03093-828	WASHER	
65	PQM30017-26	SLIT WASHER	
66	PGZ01833	CLUTCH MECHANISM ASS'Y	
66A	PU56650-1-4	TAKE UP CLUTCH	
66B	YU40427	SUPPLY CLUTCH	
66C	Q03093-827	SPACER	
66D	PQM30017-2	SLIT WASHER	
67	PU49485-3	WIRE CLAMP	
68	SDST2610Z	SCREW	M2.6×10
69	SDSP2608Z	SCREW	M2.6×8
70	PUS37229C	CASSETTE LED ASS'Y	
71	SDST2605Z	SCREW	M2.6×5
72	PGS30179A	AL SWITCH ASS'Y	
72A	PRD43723A	AL SWITCH BRACKET ASS'Y	
72B	PRD42599A	AL SWITCH LEVER ASS'Y	
72C	PRD42600	TORSION SPRING	
72D	Q03093-831	WASHER	
72E	REE2000	E.RING	
72F	PGZ00503	INSERT SWITCH	
72G	SDSP2006Z	SCREW	M2×6
73	SDSP2604Z	SCREW	M2.6×4
74	PGZ02120	A/C HEAD	
75	PRD43710A	HEAD ARM ASS'Y	
76	PQM30002-197	COMPRESSION SPRING	
77	SDSP2612Z	SCREW	M2.6×12
78	PQ44621	SPECIAL SCREW	
79	PQ43687B	SPECIAL SCREW	
80	NTS4000ZS	NUT	
81	PQ44119	TORSION SPRING	
82	PQ45181	TAPER NUT	
83	PRD43795A-01	FULL ERASE HEAD ASS'Y	
83A	PRD30860-01-02	FE HEAD ARM	
83B	PU60646	FE HEAD	
83C	SSSK2050M	SCREW	M2×5
84	PQ42804	LOWER FLANGE	
85	PRD44136-01-01	COLLAR	
86	PQ42806	TORSION SPRING	

Symbol No.	Part No.	Part Name	Description
87	PQM30002-189	COMPRESSION SPRING	
88	PRD44135-01-01	IMPEDANCE ROLLER	
91	Q03093-831	WASHER	
92	REE1500	E.RING	
93	PRD43733	TAPE GUIDE	
94	PRD44270	GUIDE FLANGE	
95	PRD44112-01-02	GUIDE SHEET	
96	PRD43165	SPECIAL SCREW	
97	PRD30023-30	COMPRESSION SPRING	
98	YQ40653B	POLE BASE ASS'Y (S)	
99	YQ40509D	POLE BASE ASS'Y (T)	
100	PQ40872	SPACER	
101	PQ41269	SPECIAL SCREW	
102	PGZ01728-01-01	CAPSTAN MOTOR	
103	SDSP2604Z	SCREW	M2.6 × 4
104	PQM30003-12	REEL BELT	
105	PU61315	DEW SENSOR	
106	SPSH1725M	SCREW	M1.7 × 25
107	PQ40993B	TU GUIDE ASS'Y	
108	PQM30018-33	WASHER	
109	PQ40994-1-2	TORSION SPRING	
110	REE2500	E RING	
111	PQ31604A-8	LOCK PLATE ASS'Y	
112	YQM30001-26-5	SPRING	
113	PQM30017-32	SLIT WASHER	
114	YQ40833-1-1	CANCEL LEVER	
115	PQM30013-10	FLANGE COLLAR	
116	PQ42817	TORSION SPRING	
117	SDST2608Z	SCREW	M2.6 × 8
118	PGS30181A	LOCK SW ASS'Y	
118A	PRD43725A	LOCK SW BRACKET ASS'Y	
118B	PRD43726A	LOCK SW LEVER ASS'Y	
118C	PRD43717	TORSION SPRING	
118D	Q03093-831	WASHER	
118E	REE2000	E.RING	
118F	PGZ00503	INSERT SWITCH	
118G	SDSP2006ZY	SCREW	M2 × 6
119	PRD43751A	RELEASE ARM ASS'Y	
120	PRD43757	TORSION SPRING	
121	Q03093-825	WASHER	
122	REE2500	E RING	
123	YQ40637-1-1	MDA HOLDER	
124	SDST2612ZY	SCREW	M2.6 × 12
125	SDST2610ZY	SCREW	M2.6 × 10
126	PRD30084-03	WASHER	
127	PRD44056-03	INSULATOR	
128	PRD44056-04-01	INSULATOR	
129	PRD43675	COLLAR	
130	PRD44094	GUIDE FRANGE	
131	PRD30026-41	COLLAR	
132	PRD44143	CORNER BRACKET	
133	SDSP2604Z	SCREW	M2.6 × 4
134	PRD43768	COVER	
135	SPSH1730M	MINI SCREW	M1.7 × 30
136	PRD44272	BRACKET	
137	SDST2605Z	SCREW	M2.6 × 5

5.5 RIGHT SIDE COVER ASSEMBLY M5

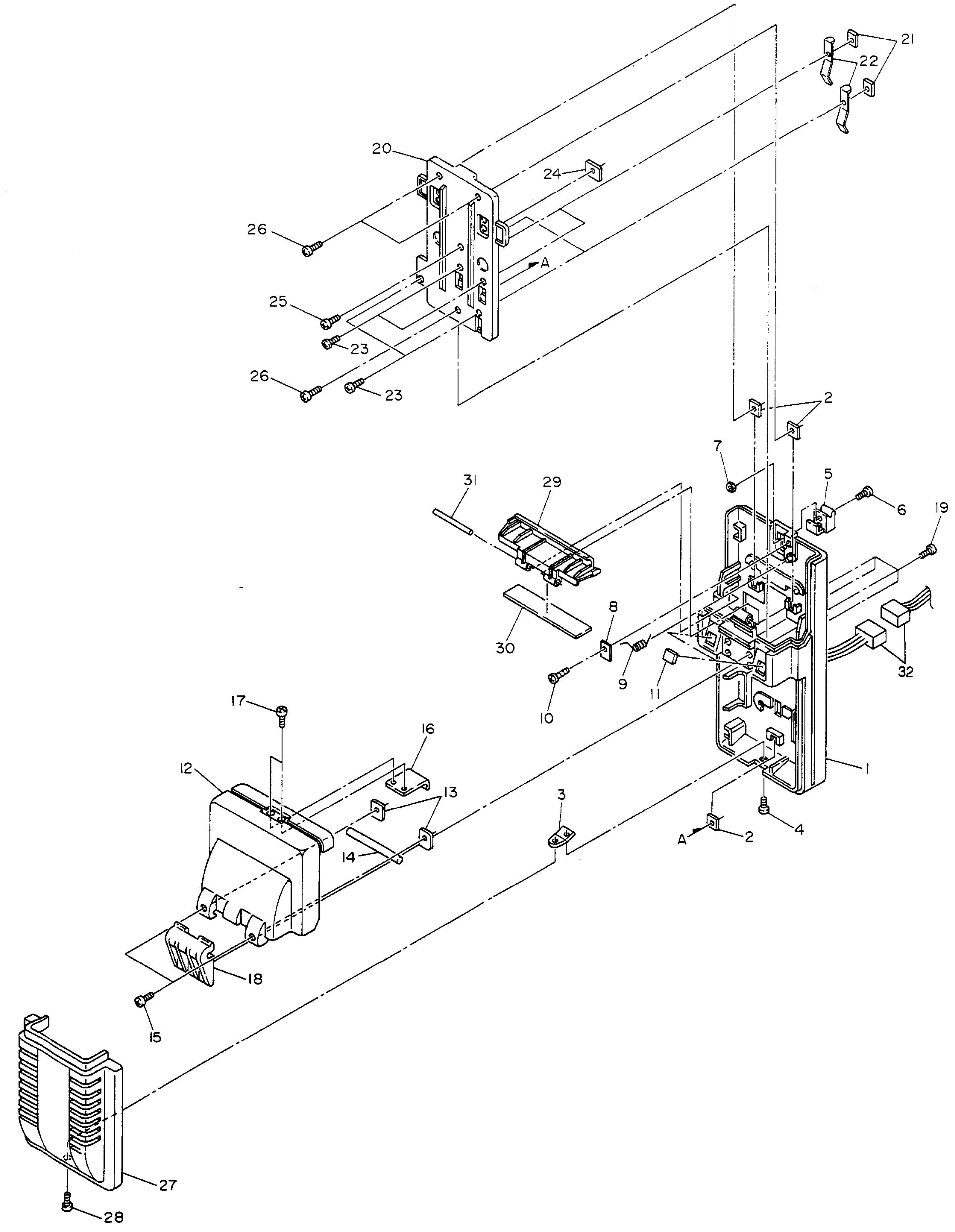

S1
AUCP BOARD ASSY
22
S1
25
24
26
S1
22
18
23
5
S3
6
S1
7
19
S2
21
20
16
17
S1
SW3 BOARD ASSY
15
8
13
9
10
3
11
2
SW2 BOARD ASSY
13
14
4
12
1

● RIGHT SIDE COVER ASSEMBLY LIST M5

M5MM☐☐☐☐

Symbol No.	Part No.	Part Name	Description
1	SC31993-002	FUNCTION COVER	
2	SC45899-001	FUNCTION PLATE	
3	SC45900-001	FUNCTION SHAFT	
4	SC45864-001	FUNCTION BKT	
5	SC10199-003	R.SIDE COVER	
6	SC32006-001	PAD SHEET	
7	PU59891-2	MAGNET	
8	SC32004-001	VTR KNOB	
9	SC32005-001	VTR NAME PLATE	
10	SC45874-001	TIME DATE KNOB	
11	SC45865-001	LCD NAME PLATE	
12	SC45848-001	TRIGGER COVER	
13	SC45866-001	SWITCH KNOB	
14	SC44828-002	SWITCH CAP	
15	SC45866-002	SWITCH KNOB	
16	SC32016-001	AW BASE	
17	SC45851-001	SELECT KNOB	
18	PRD43835	KNOB	
19	SC45849-001	SLIDE KNOB	
20	SC45849-002	SLIDE KNOB	
21	SC45852-001	REC LEVEL KNOB	
22	PU49485-3	WIRE CLAMP	
23	CR2032SN	BATTERY	
24	PU56729-2	WIRE CLAMP	
25	SC45918-010	WIRE ASS'Y	
26	SC45909-590	TUBE	
S1	SDSF2606Z	SCREW	M2.6×6
S2	SDSF2005Z	SCREW	M2×5
S3	SDSP2604Z	SCREW	M2.6×4

5.6 BATTERY HOLDER ASSEMBLY M6

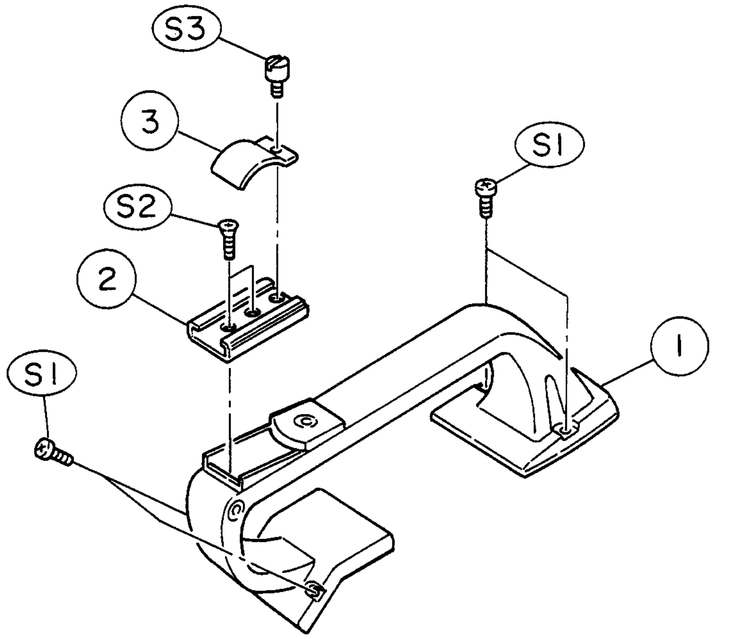


● BATTERY HOLDER ASSEMBLY LIST M6

M6 M M □□□□

Symbol No.	Part No.	Part Name	Description
⚠ 1	SC10156-001	BATTERY HOLDER BASE	
2	SC44899-002	NUT	
3	SC45152-001	ADJUST PLATE	
4	SDSP3004N	SCREW	M3×4
5	SC43570-001	LOCK KNOB	
6	SDSP2006M	SCREW	M2×6
7	NNS2000N	NUT	
8	SC43571-002	BRACKET	
9	SC43568-001	SPRING	
10	SDSF2005M	SCREW	M2×5
11	SC45155-001	CUSHION	
12	SC20476-002	COVER	
13	PRD30955-02	ADJUST PLATE	
14	SC45154-001	SHAFT	
15	SSSP2606M	SCREW	M2.6×6
16	PRD30955-05	ADJUST PLATE	
17	SPSK2650M	SCREW	M2.6×5
18	SC31501-002	HOLDER	
19	SDSP2605M	SCREW	M2.6×5
20	SC20478-004	T.COVER	
21	SC44886-001	PLATE	
22	SC45150-001	PLATE	
23	SSSK2040M	SCREW	M2×4
24	PRD30955-04	ADJUST PLATE	
25	SSSK2040M	SCREW	M2×40
26	SSSP3005M	SCREW	M3×5
27	SC20477-002	COVER	
28	SDSP3005M	SCREW	M3×5
29	SC31319-011	GUIDE	
30	SC44869-006	SPRING	
31	SC44805-001	SHAFT	
⚠ 32	PGJ05027	BATTERY CONNECTOR ASS'Y	

5.7 HANDLE ASSEMBLY M7

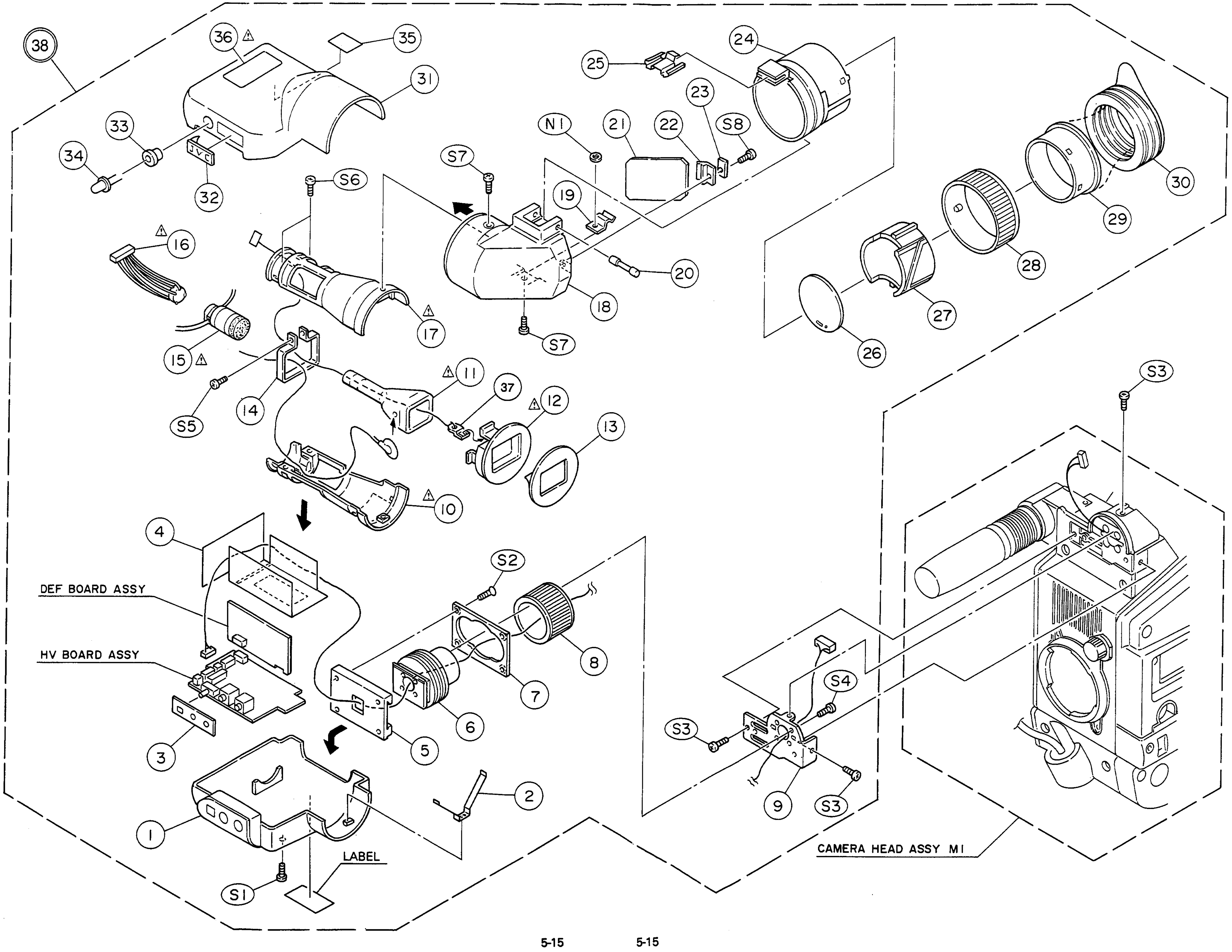


● HANDLE ASSEMBLY LIST M7

M7MM☐☐☐☐

Symbol No.	Part No.	Part Name	Description
1	SC10201-001	HANDLE	
2	SC40886-001	SHOE	
3	C40936	SPRING	
S1	SDSP4006M	SCREW	M4×6
S2	SSSP3006N	SCREW	M3×6
S3	SC44821-001	SCREW	

5.8 VF ASSEMBLY M8



38
36
35
31
33
34
32
S6
16
17
15
14
S5
11
37
12
13
10
25
24
23
N1
21
22
S8
S7
19
20
18
S7
30
29
28
27
26
4
DEF BOARD ASSY
HV BOARD ASSY
3
1
S1
LABEL
2
5
6
7
8
S2
S3
S4
S3
9
S3
CAMERA HEAD ASSY M1

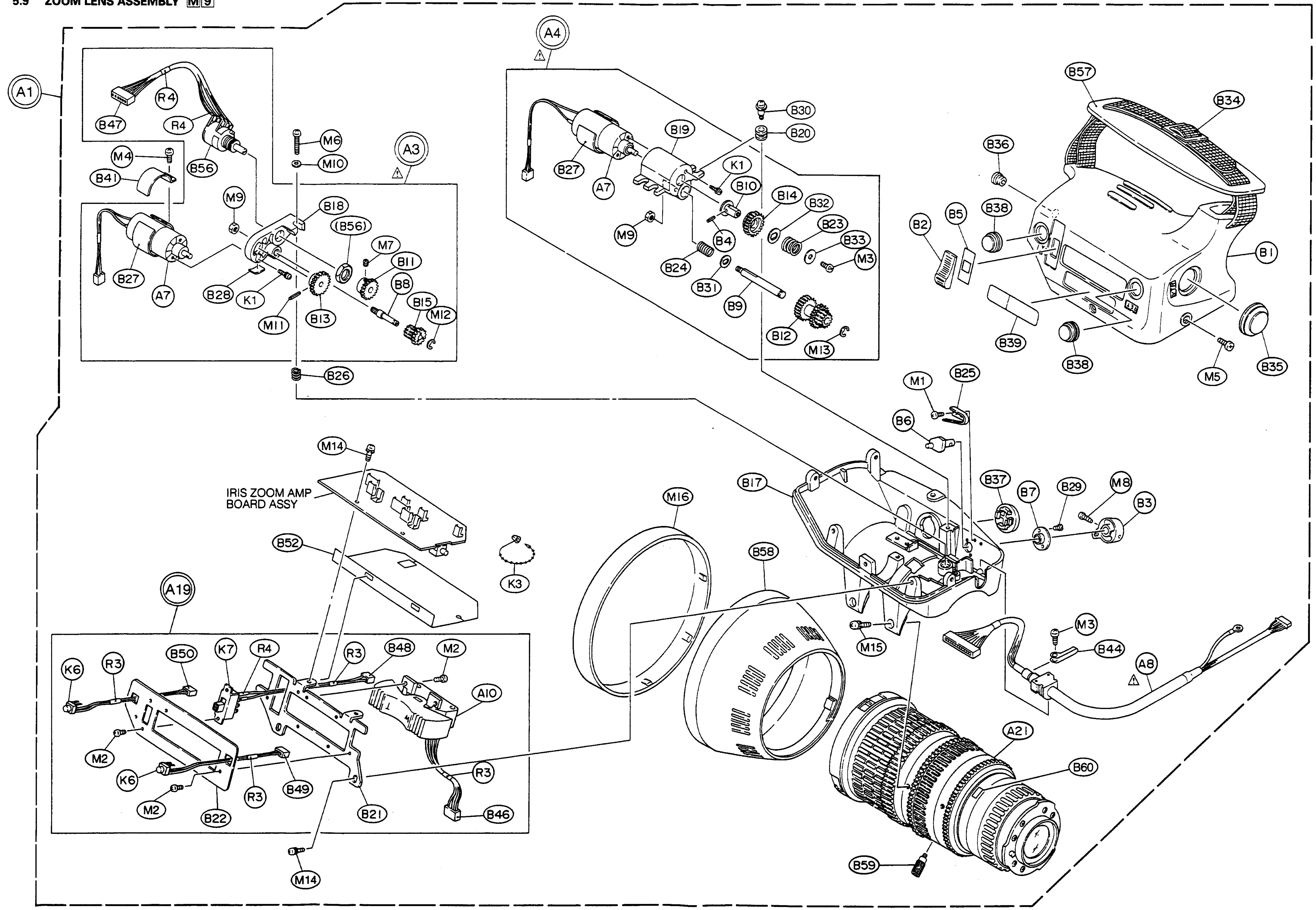
- **VF ASSEMBLY LIST** M8

M8MM☐☐☐☐

Symbol No.	Part No.	Part Name	Description
1	SC20627-001	BOTTOM COVER	
2	SC44551-001	SPRING	
3	SC45894-001	VR MASK	
4	SC45893-001	SHEET	
5	SC45870-001	SLIDE GUIDE	
6	SC45876-001	SLIDE BASE	
7	SC45892-001	PLATE	
8	SC45871-001	LOCK RING-1	
9	SC45929-001	VF BRACKET	
⚠ 10	SC20629-00A	CRT HOLDER (B)	
⚠ 11	SC40909-001	EARTH TERMINAL	
⚠ 12	SC32010-002	CRT MASK	
13	SC45873-001	CRT PLATE	
14	M04KAX07WB	PICTURE TUBE(W)	
⚠ 15	SCV1852-20A	DEFLECTION YOKE	
⚠ 16	SCV1273-001	CRT SOCKET	
⚠ 17	SC20628-00A	CRT HOLDER (U)	
18	SC20630-002	MIRROR CASE	
19	SC43460-001	PLATE	
20	SC45880-002	PIN	
21	SC43461-002	MIRROR	
22	SC43462-001	MIRROR HOLDER	
23	SC43614-001	HOLDER PLATE	
24	SC20632-001	LENS SL.COVER	
25	SC45879-002	LOCK SPRING	
26	SC42475-001	LENS	
27	SC32011-001	LENS HOLDER	
28	SC45878-002	ADJUST RING	
29	SC32013-002	LOCK RING	
30	SC32014-001	EYE CAP	
31	SC20626-001	UPPER COVER	
32	SC45924-001	MARK	
33	SM3512	L.E.D.MOUNT	
34	ER-300	L.E.D.	STANLEY
35	SC31917-001	LABEL	
⚠ 36	SC41737-011	CAUTION LABEL	
37	SC40909-001	EARTH TERMINAL	
38	SCM0911	VIEW FINDER ASS'Y	
S1	SBSF2608M	SCREW	M2.6×8
S2	SSSP2608M	SCREW	M2.6×8
S3	SDSP3006M	SCREW	M3×6
S4	LPSP3008Z	SCREW	M3×8
S5	SPSP2008Z	SCREW	M2×8
S6	SBSF2608M	SCREW	M2.6×8
S7	SDSP2606M	SCREW	M2.6×6
S8	SPSA2006M	SCREW	M2×6
N1	NNS2600N	NUT	

5.9 ZOOM LENS ASSEMBLY M9

Note: Part indicated with parenthesized symbol number is included in the part of the same symbol number.


A1
R4
B47
R4
B56
M4
B41
B27
A7
M6
M10
A3
M9
B18
(B56)
M7
B11
B28
K1
B13
B8
B15
M12
M11
B26
A4
B30
B20
B19
B27
A7
K1
B10
B14
B32
B23
B33
M3
M9
B4
B24
B31
B9
B12
M13
B57
B34
B36
B38
B5
B2
B1
B39
B38
M5
B35
M1
B25
B6
M14
IRIS ZOOM AMP
BOARD ASSY
B52
K3
M16
B17
B37
B7
B29
M8
B3
B58
M15
M3
B44
A8
A19
K6
R3
B50
K7
R4
R3
B48
M2
A10
M2
K6
M2
B22
R3
B49
B21
R3
B46
A21
B60
B59
M14

● ZOOM LENS ASSEMBLY LIST M9

M9MM☐☐☐☐

Symbol No.	Part No.	Part Name	Description
A1	SCV2705-001	ZOOM LENS ASS'Y	
⚠ A3	34A7981790	IRIS GEAR ASS'Y	
⚠ A4	34A7981800	ZOOM GEAR ASS'Y	
A7	101A7992690	MOTOR ASS'Y	
⚠ A8	113A7992650	CONNECTOR WITH CABLE ASS'Y	
A10	117A3964080	SEESAW POTENTIOMETER	
A19	314A6362690	SEESAW CONTROL ASS'Y	
A21	324A7981030	LENS BARREL ASS'Y	
B1	11B6362720	BODY COVER	
B2	16B6362730	KNOB	
B3	16B6673320	KNOB	
B4	17B7168930	SPRING PIN	
B5	29B6362740	SLIDING PIECE	
B6	29B6673330	ROTATING DISK	
B7	31B7981810	FLANGED BEARING	
B8	32B7981850	SHAFT	
B9	32B7981910	SHAFT	
B10	33B2177120	GEAR MOUNTING SHAFT	
B11	34B4640700	GEAR	
B12	34B6673500	SPUR GEAR	
B13	34B7981860	SPUR GEAR	
B14	34B7981920	SPUR GEAR	
B15	34B7981940	SPUR GEAR	
B17	41B7981820	MOUNTING FRAME	
B18	41B7981870	MOUNTING FRAME	
B19	41B7981930	MOUNTING FRAME	
B20	42B7168950	RUBBER BUSHING	
B21	46B6362920	SEESAW POTENTIOMETER MOUNTING PLATE	
B22	46B6362930	SWITCH MOUNTING PLATE	
B23	50B2177130	SORING	
B24	50B6362880	COILED SPRING	
B25	50B7957170	PLATE SPRING	
B26	50B7981830	SPRING	
B27	51B7981880	BUFFER RUBBER	
B28	51B7981890	BUFFER RUBBER	
B29	53B6673620	LIMIT SCREW	
B30	53B7168960	STEPPED SCREW	
B31	55B1950520	WASHER	
B32	55B2161040	WASHER	
B33	55B4521660	WASHER	
B34	56B6674120	BELT	
B35	57B2160890	CAP	
B36	57B3922140	CAP	
B37	57B5870540	CAP	
B38	57B6377180	CAP	
B39	58B7981710	NAME PLATE	
B41	85B7981840	RETAINING PLATE	
B44	111B6362640	CABLE RETAINER	
B46	112B6644750	CONNECTOR WITH WIRES	
B47	112B6644760	CONNECTOR WITH WIRES	
B48	112B6662930	CONNECTOR WITH WIRES	
B49	112B6662940	CONNECTOR WITH WIRES	
B50	112B6662950	CONNECTOR WITH WIRES	
B52	115B7957190	INSULATION SHEET	
B56	117B3965150	POTENTIOMETER	

Symbol No.	Part No.	Part Name	Description
B57	150B7438220	BAND	
B58	27B7981610	HOOD	
B59	47B1607400	ZOOM LEVER	
B60	SC43380-001	NAME PLATE	
K1	53K443490	TAPPING SCREW	NITTOU BTP2.0
K3	110K555380	WIRE RETAINER	KITAGAWA
K6	121K520480	KEYBOARD SWITCH	MTSUSHITA EQV-QS205K
K7	121K1993010	SLIDE SWITCH	FUJISOKU MFS201N
M1	110M200253M	SCREW	
M2	110M200403M	SCREW	
M3	110M260403M	SCREW	
M4	110M260503M	SCREW	
M5	110M260603M	SCREW	
M6	110M261400M	SCREW	
M7	131M260303W	HEXAGON SOCKET SET SCREW	
M8	142M200802M	TAPPING SCREW	
M9	150M0261M	HEXAGON NUT	
M10	160M026005K	PLAIN WASHER	
M11	182M100801H	SPRING PIN	
M12	191M025T	E WASHER	
M13	191M030T	E WASHER	
M14	280M26063M	SCREW AND WASHERS ASSEMBLY	
M15	280M30083M	SCREW AND WASHERS ASSEMBLY	
M16	300M100N	FRONT LENS CAP	
R3	115R7200030	HEAT-SHRINKABLE TUBE	SUMITOMO F42X0.1
R4	115R7210030	HEAT-SHRINKABLE TUBE	SUMITOMO F43X0.15

SECTION 6
ELECTRICAL PARTS LIST

SAFETY PRECAUTION:

Parts identified by the ⚠ symbol are critical for safety. Replace only with specified parts numbers.
For maximum reliability and performance, all other replacement parts should be identical to those specified.

NOTE:

- Parts not denoted by parts numbers are not supplied by JVC.
- Abbreviations in this list are as follows:

RESISTORS

In the "Description" column:

All resistance values are in ohms (Ω).
K expresses kilo-ohm (1 000 ohms, kΩ).
M expresses mega-ohm (10^6 ohms, MΩ).

In the "Parts Name" column:

COMP. RESISTOR	Composition Resistor
U.F. RESISTOR	Non-inflammable Resistor
O.M.F. RESISTOR	Oxide Metalized Film Resistor
FUSI. RESISTOR	Fusible Resistor
M.P. RESISTOR	Metal Plate Resistor
M.G. RESISTOR	Metal Graze Resistor
M.F. RESISTOR	Metal Film Resistor
W.W. RESISTOR	Wire Wound Resistor

CAPACITORS

In the "Description" column:

All capacitance values are in microfarad (μF) unless otherwise indicated.
P expresses picofarad (10^{-12} farad, pF).

In the "Parts Name" column:

TRIM. CAPACITOR	Trimmer Capacitor
CER. CAPACITOR	Ceramic Capacitor
E. CAPACITOR	Electrolytic Capacitor
TAN. CAPACITOR	Tantalum Capacitor
MPP CAPACITOR	Metalized Polypropylene Capacitor
O.F. CAPACITOR	Oil Film Capacitor
MPF CAPACITOR	Metalized Polyfilm Capacitor
F.M. CAPACITOR	Film Mica Capacitor
P.P. CAPACITOR	Polypropylene Capacitor
P.S. CAPACITOR	Polystyrene Capacitor

Note: In the "Description" column of the parts list, (U) means the parts for the U version while (E) is for the E Version.

Symbol No.	Part No.	Part Name	Description	
IC1	SCV1585-064	I.C.(M)	JVC (U)	← **for U version**
	SCV1585-067	I.C.(M)	JVC (E)	← **for E version**

6.1 DR BOARD ASSEMBLY LIST 01
SCK2454-03-N0A
SCK2454-03-P0A 01☐☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description
IC1	CXD1257AR	I.C.(M)	SONY
IC2	TC74HC74AF	I.C.(M)	TOSHIBA
IC3	MC74HC02AF	I.C.(M)	MOTOROLA
IC4	NJM78L15UA	I.C.(M)	JRC
IC8	MC74HC14AF	I.C.(M)	MOTOROLA
IC9	TC7S08F	I.C.(M)	TOSHIBA
IC10	TC4S69F	I.C.(M)	TOSHIBA
IC11	TC7SU04F	I.C.(M)	TOSHIBA
IC12	TC4S81F	I.C.(M)	TOSHIBA
IC101	TC74HCU04AF	I.C.(M)	TOSHIBA
IC102	UPD16510GR	I.C.(M)	NEC
IC201	TC74HCU04AF	I.C.(M)	TOSHIBA
IC202	UPD16510GR	I.C.(M)	NEC
IC301	TC74HCU04AF	I.C.(M)	TOSHIBA
IC302	UPD16510GR	I.C.(M)	NEC
IC401	NJM2068MD	I.C.(M)	JRC
IC501	NJM2068MD	I.C.(M)	JRC
IC601	NJM2068MD	I.C.(M)	JRC
IC701	TC7SU04F	I.C.(M)	TOSHIBA
Q1	2SB1219(QR)	TRANSISTOR	MATSUSHITA
Q101	2SD1820(QR)	TRANSISTOR	MATSUSHITA
Q102	2SA1462Y3Y4	TRANSISTOR	NEC
Q103	2SC3735(45)	TRANSISTOR	NEC
Q201	2SD1820(QR)	TRANSISTOR	MATSUSHITA
Q202	2SA1462Y3Y4	TRANSISTOR	NEC
Q203	2SC3735(45)	TRANSISTOR	NEC
Q301	2SD1820(QR)	TRANSISTOR	MATSUSHITA
Q302	2SA1462Y3Y4	TRANSISTOR	NEC
Q303	2SC3735(45)	TRANSISTOR	NEC
Q401	MSC3930(B)	TRANSISTOR	MOTOROLA
Q402	MSC3930(B)	TRANSISTOR	MOTOROLA
Q403	MSC3930(B)	TRANSISTOR	MOTOROLA
Q404	2SK209(L)	F.E.T.	TOSHIBA
Q501	MSC3930(B)	TRANSISTOR	MOTOROLA
Q502	MSC3930(B)	TRANSISTOR	MOTOROLA
Q503	MSC3930(B)	TRANSISTOR	MOTOROLA
Q504	2SK209(L)	F.E.T.	TOSHIBA
Q601	MSC3930(B)	TRANSISTOR	MOTOROLA
Q602	MSC3930(B)	TRANSISTOR	MOTOROLA
Q603	MSC3930(B)	TRANSISTOR	MOTOROLA
Q604	2SK209(L)	F.E.T.	TOSHIBA
D1	MA335	DIODE	MATSUSHITA (E)
D2	MA335	DIODE	MATSUSHITA (E)
D3	MA142WA	DIODE	MATSUSHITA
D4	MA142WA	DIODE	MATSUSHITA
D5	MA142WA	DIODE	MATSUSHITA
D101	MA742	DIODE	MATSUSHITA
D102	MA742	DIODE	MATSUSHITA
D103	MA143A	DIODE	MATSUSHITA
D201	MA742	DIODE	MATSUSHITA
D202	MA742	DIODE	MATSUSHITA
D203	MA143A	DIODE	MATSUSHITA
D301	MA742	DIODE	MATSUSHITA
D302	MA742	DIODE	MATSUSHITA
D303	MA143A	DIODE	MATSUSHITA

Symbol No.	Part No.	Part Name	Description	
R1	NRSA02J-151	M.G.RESISTOR	150	1/10W
R2	NRSA02J-561	M.G.RESISTOR	560	1/10W
R3	NRSA02J-220	M.G.RESISTOR	22	1/10W
R5	NRSA02J-0R0	M.G.RESISTOR	0	1/10W
R6	NRSA02J-220	M.G.RESISTOR	22	1/10W
R7	NRSA02J-220	M.G.RESISTOR	22	1/10W
R8	NRSA02J-0R0	M.G.RESISTOR	0	1/10W
R9	NRSA02J-221	M.G.RESISTOR	220	1/10W
R10	NRSA02J-221	M.G.RESISTOR	220	1/10W
R11	NRSA02J-0R0	M.G.RESISTOR	0	1/10W
R12	NRSA02J-681	M.G.RESISTOR	680	1/10W
R14	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R15	NRSA02J-101	M.G.RESISTOR	100	1/10W
R16	NRSA02J-101	M.G.RESISTOR	100	1/10W
R17	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R18	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R19	NRSA02J-471	M.G.RESISTOR	470	1/10W
R20	NRSA02J-471	M.G.RESISTOR	470	1/10W
R21	NRSA02J-151	M.G.RESISTOR	150	1/10W
R22	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W
R23	NRSA02J-271	M.G.RESISTOR	270	1/10W
R24	NRSA02J-104	M.G.RESISTOR	100K	1/10W(E)
R25	NRSA02J-223	M.G.RESISTOR	22K	1/10W(E)
R26	NRSA02J-0R0	M.G.RESISTOR	0	1/10W(U)
	NRSA02J-104	M.G.RESISTOR	100K	1/10W(E)
R27	NRSA02J-0R0	M.G.RESISTOR	0	1/10W(U)
	NRSA02J-104	M.G.RESISTOR	100K	1/10W(E)
R30	NRSA02J-0R0	M.G.RESISTOR	0	1/10W(U)
R34	NRSA02J-682	M.G.RESISTOR	6.8K	1/10W
R39	NRSA02J-0R0	M.G.RESISTOR	0	1/10W(E)
R41	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R46	NRSA02J-3R9	M.G.RESISTOR	3.9	1/10W
R101	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R102	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R103	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R104	NRSA02J-390	M.G.RESISTOR	39	1/10W
R105	NRSA02J-560	M.G.RESISTOR	56	1/10W
R106	SCV2662-027	FERRITE BEADS		
R107	SCV2662-027	FERRITE BEADS		
R109	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W
R201	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R202	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R203	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R204	NRSA02J-390	M.G.RESISTOR	39	1/10W
R205	NRSA02J-560	M.G.RESISTOR	56	1/10W
R206	SCV2662-027	FERRITE BEADS		
R207	SCV2662-027	FERRITE BEADS		
R209	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W
R301	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R302	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R303	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R304	NRSA02J-390	M.G.RESISTOR	39	1/10W
R305	NRSA02J-560	M.G.RESISTOR	56	1/10W
R306	SCV2662-027	FERRITE BEADS		
R307	SCV2662-027	FERRITE BEADS		
R309	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W
R401	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R402	NRSA02J-221	M.G.RESISTOR	220	1/10W
R403	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R404	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W

Symbol No.	Part No.	Part Name	Description	
R405	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R406	NRSA02J-221	M.G.RESISTOR	220	1/10W
R407	NRSA02J-332	M.G.RESISTOR	3.3K	1/10W
R408	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R409	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R410	NRSA02J-471	M.G.RESISTOR	470	1/10W
R411	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W
R412	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R414	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R415	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R416	NRSA02J-100	M.G.RESISTOR	10	1/10W
R501	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R502	NRSA02J-221	M.G.RESISTOR	220	1/10W
R503	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R504	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R505	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R506	NRSA02J-221	M.G.RESISTOR	220	1/10W
R507	NRSA02J-332	M.G.RESISTOR	3.3K	1/10W
R508	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R509	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R510	NRSA02J-471	M.G.RESISTOR	470	1/10W
R511	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W
R512	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R514	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R515	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R516	NRSA02J-100	M.G.RESISTOR	10	1/10W
R601	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R602	NRSA02J-221	M.G.RESISTOR	220	1/10W
R603	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R604	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R605	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R606	NRSA02J-221	M.G.RESISTOR	220	1/10W
R607	NRSA02J-332	M.G.RESISTOR	3.3K	1/10W
R608	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R609	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R610	NRSA02J-471	M.G.RESISTOR	470	1/10W
R611	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W
R612	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R614	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R615	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R616	NRSA02J-100	M.G.RESISTOR	10	1/10W
R701	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R702	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W
R703	NRSA02J-0R0	M.G.RESISTOR	0	1/10W
VR1	NVP1415-202	TRIM.RESISTOR	HP	
VR2	NVP1415-203	TRIM.RESISTOR	Eoo	(E)
VR101	NVP1415-203	TRIM.RESISTOR	B.V.SUB	
VR201	NVP1415-203	TRIM.RESISTOR	G.V.SUB	
VR301	NVP1415-203	TRIM.RESISTOR	R.V.SUB	
C1	NEH91VM-106	E.CAPACITOR	10	35V
C2	NEH91AM-336	E.CAPACITOR	33	10V
C3	NEA10JM-337	E.CAPACITOR	330	6.3V
C4	NCB21EK-473	CER.CAPACITOR	0.047	25V
C5	NCB21EK-473	CER.CAPACITOR	0.047	25V
C6	NEH91VM-106	E.CAPACITOR	10	35V
C7	NCB21EK-473	CER.CAPACITOR	0.047	25V

Symbol No.	Part No.	Part Name	Description	
C8	NCB21EK-473	CER.CAPACITOR	0.047	25V
C9	NEH91CM-476	E.CAPACITOR	47	16V
C10	NCT03CH-100	CER.CAPACITOR	10P	50V
C11	NCT03CH-100	CER.CAPACITOR	10P	50V
C12	NCB21EK-473	CER.CAPACITOR	0.047	25V
C16	NCB21EK-473	CER.CAPACITOR	0.047	25V
C19	NCB21EK-473	CER.CAPACITOR	0.047	25V
C20	NCB21EK-473	CER.CAPACITOR	0.047	25V
C23	NEH91AM-336	E.CAPACITOR	33	10V
C24	NEF11AM-156	TAN.CAPACITOR	15	10V
C26	NCB21EK-473	CER.CAPACITOR	0.047	25V
C27	NEF11AM-156	TAN.CAPACITOR	15	10V
C28	NCB21EK-473	CER.CAPACITOR	0.047	25V
C29	NCB21HK-103	CER.CAPACITOR	0.010	50V
C30	NCT03CH-8R0	CER.CAPACITOR	8.0P	50V (U)
	NCT03CH-101	CER.CAPACITOR	100P	50V (E)
C31	NCT03CH-220	CER.CAPACITOR	22P	50V (U)
	NCT03CH-101	CER.CAPACITOR	100P	50V (E)
C32	NCT03CH-220	CER.CAPACITOR	22P	50V (U)
C33	NCB21EK-473	CER.CAPACITOR	0.047	25V (E)
C34	NCB21EK-473	CER.CAPACITOR	0.047	25V (E)
C35	NEA11AM-227	E.CAPACITOR	220	10V
C36	NCB21EK-473	CER.CAPACITOR	0.047	25V
C37	NCT03CH-101	CER.CAPACITOR	100P	50V
C38	NEH91CM-476	E.CAPACITOR	47	16V
C39	NEF11VM-105	TAN.CAPACITOR	1.0	35V
C40	NEH91AM-336	E.CAPACITOR	33	10V
C41	NEF11EM-475	TAN.CAPACITOR	4.7	25V
C43	NEF11AM-156	TAN.CAPACITOR	15	10V
C44	NEA10JM-337	E.CAPACITOR	330	6.3V
C45	NEA10JM-337	E.CAPACITOR	330	6.3V
C47	NEA10JM-337	E.CAPACITOR	330	6.3V
C48	NCT03CH-221	CER.CAPACITOR	220P	50V
C50	NCT03CH-151	CER.CAPACITOR	150P	50V
C101	NEH91HM-105	E.CAPACITOR	1.0	50V
C102	NEH91VM-106	E.CAPACITOR	10	35V
C103	NCB21EK-473	CER.CAPACITOR	0.047	25V
C104	NCT03CH-5R0	CER.CAPACITOR	5.0P	50V
C105	NCT03CH-100	CER.CAPACITOR	10P	50V
C106	NCB21EK-473	CER.CAPACITOR	0.047	25V
C107	NCB21EK-473	CER.CAPACITOR	0.047	25V
C109	NCB21EK-473	CER.CAPACITOR	0.047	25V
C110	NCB21EK-473	CER.CAPACITOR	0.047	25V
C111	NEH91HM-105	E.CAPACITOR	1.0	50V
C112	NEH90GM-476	E.CAPACITOR	47	4V
C201	NEH91HM-105	E.CAPACITOR	1.0	50V
C202	NEH91VM-106	E.CAPACITOR	10	35V
C203	NCB21EK-473	CER.CAPACITOR	0.047	25V
C204	NCT03CH-5R0	CER.CAPACITOR	5.0P	50V
C205	NCT03CH-100	CER.CAPACITOR	10P	50V
C206	NCB21EK-473	CER.CAPACITOR	0.047	25V
C207	NCB21EK-473	CER.CAPACITOR	0.047	25V
C209	NCB21EK-473	CER.CAPACITOR	0.047	25V
C210	NCB21EK-473	CER.CAPACITOR	0.047	25V
C211	NEH91HM-105	E.CAPACITOR	1.0	50V
C212	NEH90GM-476	E.CAPACITOR	47	4V
C301	NEH91HM-105	E.CAPACITOR	1.0	50V
C302	NEH91VM-106	E.CAPACITOR	10	35V
C303	NCB21EK-473	CER.CAPACITOR	0.047	25V

[DR]

Symbol No.	Part No.	Part Name	Description
C304	NCT03CH-5R0	CER.CAPACITOR	5.0P 50V
C305	NCT03CH-100	CER.CAPACITOR	10P 50V
C306	NCB21EK-473	CER.CAPACITOR	0.047 25V
C307	NCB21EK-473	CER.CAPACITOR	0.047 25V
C309	NCB21EK-473	CER.CAPACITOR	0.047 25V
C310	NCB21EK-473	CER.CAPACITOR	0.047 25V
C311	NEH91HM-105	E.CAPACITOR	1.0 50V
C312	NEH90GM-476	E.CAPACITOR	47 4V
C401	NCB21EK-473	CER.CAPACITOR	0.047 25V
C404	NEH90GM-476	E.CAPACITOR	47 4V
C405	NEN21AM-106	NP.CAPACITOR	10 10V
C406	NEN11HM-105	NP.CAPACITOR	1.0 50V
C407	NCT03CH-470	CER.CAPACITOR	47P 50V
C408	NCB21EK-473	CER.CAPACITOR	0.047 25V
C409	NCB21EK-473	CER.CAPACITOR	0.047 25V
C501	NCB21EK-473	CER.CAPACITOR	0.047 25V
C504	NEH90GM-476	E.CAPACITOR	47 4V
C505	NEN21AM-106	NP.CAPACITOR	10 10V
C506	NEN11HM-105	NP.CAPACITOR	1.0 50V
C507	NCT03CH-470	CER.CAPACITOR	47P 50V
C508	NCB21EK-473	CER.CAPACITOR	0.047 25V
C509	NCB21EK-473	CER.CAPACITOR	0.047 25V
C601	NCB21EK-473	CER.CAPACITOR	0.047 25V
C604	NEH90GM-476	E.CAPACITOR	47 4V
C605	NEN21AM-106	NP.CAPACITOR	10 10V
C606	NEN11HM-105	NP.CAPACITOR	1.0 50V
C607	NCT03CH-470	CER.CAPACITOR	47P 50V
C608	NCB21EK-473	CER.CAPACITOR	0.047 25V
C609	NCB21EK-473	CER.CAPACITOR	0.047 25V
C701	NCB21HK-103	CER.CAPACITOR	0.010 50V
C702	NCB21EK-473	CER.CAPACITOR	0.047 25V
VC1	NAT3112-200	TRIM.CAPACITOR	20P (U)
L1	SCV2662-060	FERRITE BEADS	
L2	SCV2662-060	FERRITE BEADS	
L3	SSV1330-150	COIL	15μH
L4	SCV2662-060	FERRITE BEADS	
L5	SCV2662-060	FERRITE BEADS	
L6	SCV2662-060	FERRITE BEADS	
L7	SCV2662-027	FERRITE BEADS	
L8	SCV2662-027	FERRITE BEADS	
LC1	SCV1804-222	EMI FILTER	
LC2	SCV1804-222	EMI FILTER	
LC3	SCV1804-222	EMI FILTER	
LC401	SSV1987-001	LOW PASS FILTER	6MHz
LC501	SSV1987-001	LOW PASS FILTER	6MHz
LC601	SSV1987-001	LOW PASS FILTER	6MHz
X1	CE41081-A0A	CRYSTAL	28.636MHz (U)
	CE41212-001	CRYSTAL	28.375MHz (E)
CN1	SSV1321-018	CONNECTOR	18pin
CN2	SSV1321-018	CONNECTOR	18pin
CN3	SSV1321-018	CONNECTOR	18pin
CN4	SSV1321-010	CONNECTOR	10pin

Symbol No.	Part No.	Part Name	Description
CN5	SSV1321-020	CONNECTOR	20pin
TP1	SCV1880-001	TEST POINT	(E)
TP4	SCV1880-001	TEST POINT	
TP5	SCV1880-001	TEST POINT	

6.2 ISB BOARD ASSEMBLY LIST 02
SCK2452-01-00A

02□□□□□□

Symbol No.	Part No.	Part Name	Description
IC2	CXA1439M	I.C.(M)	SONY
Q1	MSC3930(B)	TRANSISTOR	MOTOROLA
Q2	MSC3930(B)	TRANSISTOR	MOTOROLA
R1	NRVA63D-184	M.F.RESISTOR	180K 1/16W
R2	NRVA63D-273	M.F.RESISTOR	27K 1/16W
R3	NRVA63D-681	M.F.RESISTOR	680 1/16W
R4	NRVA63D-682	M.F.RESISTOR	6.8K 1/16W
R5	NRVA63D-101	M.F.RESISTOR	100 1/16W
R6	NRVA63D-152	M.F.RESISTOR	1.5K 1/16W
R7	NRVA63D-330	M.F.RESISTOR	33 1/16W
C1	NEF11AM-225	TAN.CAPACITOR	2.2 10V
C2	NEF11AM-225	TAN.CAPACITOR	2.2 10V
C3	NCB21EK-473	CER.CAPACITOR	0.047 25V
C4	NEF11VM-335	TAN.CAPACITOR	3.3 35V
C5	NCB21EK-473	CER.CAPACITOR	0.047 25V
C6	NCB21EK-473	CER.CAPACITOR	0.047 25V
C7	NCB21EK-473	CER.CAPACITOR	0.047 25V
C8	NCB21EK-473	CER.CAPACITOR	0.047 25V
C9	NEF11AM-156	TAN.CAPACITOR	15 10V
CN1	SCV2644-118	CONNECTOR	18pin
SK1	SCV2677-001	CCD SOCKET	FOR IC1

6.3 ISG BOARD ASSEMBLY LIST 03
SCK2452-02-00A

03☐☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description	
IC2	CXA1439M	I.C.(M)	SONY	
Q1	MSC3930(B)	TRANSISTOR	MOTOROLA	
Q2	3SK157	F.E.T.	NEC	
Q3	2SA1622(M6)	TRANSISTOR	SANYO	
Q4	MSC3930(B)	TRANSISTOR	MOTOROLA	
R1	NRVA63D-184	M.F.RESISTOR	180K	1/16W
R2	NRVA63D-273	M.F.RESISTOR	27K	1/16W
R3	NRVA63D-681	M.F.RESISTOR	680	1/16W
R4	NRVA63D-682	M.F.RESISTOR	6.8K	1/16W
R5	NRVA63D-332	M.F.RESISTOR	3.3K	1/16W
R6	NRVA63D-472	M.F.RESISTOR	4.7K	1/16W
R7	NRVA63D-101	M.F.RESISTOR	100	1/16W
R8	NRVA63D-152	M.F.RESISTOR	1.5K	1/16W
R9	NRVA63D-330	M.F.RESISTOR	33	1/16W
C1	NEF11AM-225	TAN.CAPACITOR	2.2	10V
C2	NEF11AM-225	TAN.CAPACITOR	2.2	10V
C3	NCB21EK-473	CER.CAPACITOR	0.047	25V
C4	NEF11VM-335	TAN.CAPACITOR	3.3	35V
C5	NCB21EK-473	CER.CAPACITOR	0.047	25V
C6	NCB21EK-473	CER.CAPACITOR	0.047	25V
C7	NCB21EK-473	CER.CAPACITOR	0.047	25V
C8	NCB21EK-473	CER.CAPACITOR	0.047	25V
C9	NEF11AM-156	TAN.CAPACITOR	15	10V
C10	NCT03CH-330	CER.CAPACITOR	33P	50V
CN2	SCV2644-118	CONNECTOR	18pin	
SK1	SCV2677-001	CCD SOCKET	FOR IC1	

6.4 ISR BOARD ASSEMBLY LIST 04
SCK2452-03-00A

04☐☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description	
IC2	CXA1439M	I.C.(M)	SONY	
Q1	MSC3930(B)	TRANSISTOR	MOTOROLA	
Q2	MSC3930(B)	TRANSISTOR	MOTOROLA	
R1	NRVA63D-184	M.F.RESISTOR	180K	1/16W
R2	NRVA63D-273	M.F.RESISTOR	27K	1/16W
R3	NRVA63D-681	M.F.RESISTOR	680	1/16W
R4	NRVA63D-682	M.F.RESISTOR	6.8K	1/16W
R5	NRVA63D-101	M.F.RESISTOR	100	1/16W
R6	NRVA63D-102	M.F.RESISTOR	1.0K	1/16W
R7	NRVA63D-330	M.F.RESISTOR	33	1/16W
C1	NEF11AM-225	TAN.CAPACITOR	2.2	10V
C2	NEF11AM-225	TAN.CAPACITOR	2.2	10V
C3	NCB21EK-473	CER.CAPACITOR	0.047	25V
C4	NEF11VM-335	TAN.CAPACITOR	3.3	35V
C5	NCB21EK-473	CER.CAPACITOR	0.047	25V
C6	NCB21EK-473	CER.CAPACITOR	0.047	25V
C7	NCB21EK-473	CER.CAPACITOR	0.047	25V
C8	NCB21EK-473	CER.CAPACITOR	0.047	25V
C9	NEF11AM-156	TAN.CAPACITOR	15	10V
CN3	SCV2644-118	CONNECTOR	18pin	
SK1	SCV2677-001	CCD SOCKET	FOR IC1	

6.5 PR1 BOARD ASSEMBLY LIST 05

SCK2454-01-00A 05☐☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description
IC1	MC14053BF	I.C.(M)	MOTOROLA
IC3	NJM2068MD	I.C.(M)	JRC
IC4	NJM2068MD	I.C.(M)	JRC
IC5	NJM2068MD	I.C.(M)	JRC
IC6	MC14050BFL	I.C.(M)	MOTOROLA
IC101	NJM1496M	I.C.(M)	JRC
IC301	NJM1496M	I.C.(M)	JRC
Q101	MSC3930(B)	TRANSISTOR	MOTOROLA
Q102	MSC3930(B)	TRANSISTOR	MOTOROLA
Q103	2SK209(L)	F.E.T.	TOSHIBA
Q104	2SK209(L)	F.E.T.	TOSHIBA
Q105	2SK209(L)	F.E.T.	TOSHIBA
Q106	2SK209(L)	F.E.T.	TOSHIBA
Q107	MSC3930(B)	TRANSISTOR	MOTOROLA
Q111	MSC3930(B)	TRANSISTOR	MOTOROLA
Q112	MSC3930(B)	TRANSISTOR	MOTOROLA
Q113	MSC3930(B)	TRANSISTOR	MOTOROLA
Q114	2SK209(L)	F.E.T.	TOSHIBA
Q115	2SC3929(ST)	TRANSISTOR	MATSUSHITA
Q116	MSC3930(B)	TRANSISTOR	MOTOROLA
Q117	MSC3930(B)	TRANSISTOR	MOTOROLA
Q118	2SK209(L)	F.E.T.	TOSHIBA
Q119	MSC3930(B)	TRANSISTOR	MOTOROLA
Q201	MSC3930(B)	TRANSISTOR	MOTOROLA
Q202	MSC3930(B)	TRANSISTOR	MOTOROLA
Q203	2SK209(L)	F.E.T.	TOSHIBA
Q204	2SK209(L)	F.E.T.	TOSHIBA
Q205	2SK209(L)	F.E.T.	TOSHIBA
Q206	2SK209(L)	F.E.T.	TOSHIBA
Q207	MSC3930(B)	TRANSISTOR	MOTOROLA
Q213	MSC3930(B)	TRANSISTOR	MOTOROLA
Q214	2SK209(L)	F.E.T.	TOSHIBA
Q215	2SC3929(ST)	TRANSISTOR	MATSUSHITA
Q216	MSC3930(B)	TRANSISTOR	MOTOROLA
Q217	MSC3930(B)	TRANSISTOR	MOTOROLA
Q218	2SK209(L)	F.E.T.	TOSHIBA
Q219	MSC3930(B)	TRANSISTOR	MOTOROLA
Q301	MSC3930(B)	TRANSISTOR	MOTOROLA
Q302	MSC3930(B)	TRANSISTOR	MOTOROLA
Q303	2SK209(L)	F.E.T.	TOSHIBA
Q304	2SK209(L)	F.E.T.	TOSHIBA
Q305	2SK209(L)	F.E.T.	TOSHIBA
Q306	2SK209(L)	F.E.T.	TOSHIBA
Q307	MSC3930(B)	TRANSISTOR	MOTOROLA
Q311	MSC3930(B)	TRANSISTOR	MOTOROLA
Q312	MSC3930(B)	TRANSISTOR	MOTOROLA
Q313	MSC3930(B)	TRANSISTOR	MOTOROLA
Q314	2SK209(L)	F.E.T.	TOSHIBA
Q315	2SC3929(ST)	TRANSISTOR	MATSUSHITA
Q316	MSC3930(B)	TRANSISTOR	MOTOROLA
Q317	MSC3930(B)	TRANSISTOR	MOTOROLA
Q318	2SK209(L)	F.E.T.	TOSHIBA
Q319	MSC3930(B)	TRANSISTOR	MOTOROLA
D1	MA142A	DIODE	MATSUSHITA
R1	NRSA02J-222	M.G.RESISTOR	2.2K 1/10W

Symbol No.	Part No.	Part Name	Description
R5	NRVA02D-1502	M.F.RESISTOR	15.0K 1/10W
R6	NRVA02D-4701	M.F.RESISTOR	4.70K 1/10W
R9	NRSA02J-222	M.G.RESISTOR	2.2K 1/10W
R10	NRVA02D-1502	M.F.RESISTOR	15.0K 1/10W
R11	NRSA02J-472	M.G.RESISTOR	4.7K 1/10W
R101	NRSA02J-472	M.G.RESISTOR	4.7K 1/10W
R102	NRSA02J-0R0	M.G.RESISTOR	0 1/10W
R103	NRSA02J-102	M.G.RESISTOR	1.0K 1/10W
R104	NRSA02J-183	M.G.RESISTOR	18K 1/10W
R105	NRSA02J-472	M.G.RESISTOR	4.7K 1/10W
R106	NRSA02J-221	M.G.RESISTOR	220 1/10W
R107	NRVA02D-1501	M.F.RESISTOR	1.50K 1/10W
R108	NRVA02D-4700	M.F.RESISTOR	470 1/10W
R109	NRVA02D-1000	M.F.RESISTOR	100 1/10W
R110	NRVA02D-39R0	M.F.RESISTOR	39.0 1/10W
R111	NRVA02D-47R0	M.F.RESISTOR	47.0 1/10W
R112	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R113	NRVA02D-3301	M.F.RESISTOR	3.30K 1/10W
R114	NRSA02J-472	M.G.RESISTOR	4.7K 1/10W
R115	NRSA02J-333	M.G.RESISTOR	33K 1/10W
R116	NRSA02J-333	M.G.RESISTOR	33K 1/10W
R117	NRSA02J-333	M.G.RESISTOR	33K 1/10W
R118	NRSA02J-333	M.G.RESISTOR	33K 1/10W
R123	NRSA02J-221	M.G.RESISTOR	220 1/10W
R124	NRSA02J-472	M.G.RESISTOR	4.7K 1/10W
R125	NRVA02D-2701	M.F.RESISTOR	2.70K 1/10W
R126	NRSA02J-101	M.G.RESISTOR	100 1/10W
R127	NRVA02D-3301	M.F.RESISTOR	3.30K 1/10W
R128	NRSA02J-101	M.G.RESISTOR	100 1/10W
R129	NRSA02J-101	M.G.RESISTOR	100 1/10W
R130	NRVA02D-3301	M.F.RESISTOR	3.30K 1/10W
R131	NRSA02J-221	M.G.RESISTOR	220 1/10W
R132	NRVA02D-1801	M.F.RESISTOR	1.80K 1/10W
R134	NRSA02J-221	M.G.RESISTOR	220 1/10W
R135	NRVA02D-2201	M.F.RESISTOR	2.20K 1/10W
R136	NRVA02D-1203	M.F.RESISTOR	120K 1/10W
R137	NRVA02D-8202	M.F.RESISTOR	82.0K 1/10W
R138	NRSA02J-0R0	M.G.RESISTOR	0 1/10W
R139	NRSA02J-103	M.G.RESISTOR	10K 1/10W
R140	NRSA02J-221	M.G.RESISTOR	220 1/10W
R141	NRSA02J-472	M.G.RESISTOR	4.7K 1/10W
R142	NRSA02J-223	M.G.RESISTOR	22K 1/10W
R143	NRSA02J-103	M.G.RESISTOR	10K 1/10W
R144	NRSA02J-102	M.G.RESISTOR	1.0K 1/10W
R145	NRSA02J-153	M.G.RESISTOR	15K 1/10W
R146	NRSA02J-472	M.G.RESISTOR	4.7K 1/10W
R148	NRVA02D-4701	M.F.RESISTOR	4.70K 1/10W
R149	NRVA02D-1002	M.F.RESISTOR	10.0K 1/10W
R150	NRVA02D-6800	M.F.RESISTOR	680 1/10W
R151	NRVA02D-5601	M.F.RESISTOR	5.60K 1/10W
R152	NRSA02J-563	M.G.RESISTOR	56K 1/10W
R153	NRSA02J-682	M.G.RESISTOR	6.8K 1/10W
R154	NRSA02J-104	M.G.RESISTOR	100K 1/10W
R155	NRSA02J-470	M.G.RESISTOR	47 1/10W
R156	NRSA02J-272	M.G.RESISTOR	2.7K 1/10W
R157	NRSA02J-472	M.G.RESISTOR	4.7K 1/10W
R201	NRSA02J-472	M.G.RESISTOR	4.7K 1/10W
R202	NRSA02J-222	M.G.RESISTOR	2.2K 1/10W
R203	NRSA02J-471	M.G.RESISTOR	470 1/10W

Symbol No.	Part No.	Part Name	Description	
R204	NRSA02J-183	M.G.RESISTOR	18K	1/10W
R205	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R206	NRSA02J-221	M.G.RESISTOR	220	1/10W
R207	NRVA02D-1501	M.F.RESISTOR	1.50K	1/10W
R208	NRVA02D-4700	M.F.RESISTOR	470	1/10W
R209	NRVA02D-1000	M.F.RESISTOR	100	1/10W
R210	NRVA02D-39R0	M.F.RESISTOR	39.0	1/10W
R211	NRVA02D-47R0	M.F.RESISTOR	47.0	1/10W
R212	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R213	NRVA02D-3301	M.F.RESISTOR	3.30K	1/10W
R214	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R215	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R216	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R217	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R218	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R240	NRSA02J-332	M.G.RESISTOR	3.3K	1/10W
R241	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R242	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R243	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R244	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R245	NRSA02J-153	M.G.RESISTOR	15K	1/10W
R246	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R248	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R249	NRVA02D-1002	M.F.RESISTOR	10.0K	1/10W
R250	NRVA02D-6800	M.F.RESISTOR	680	1/10W
R251	NRVA02D-5601	M.F.RESISTOR	5.60K	1/10W
R252	NRSA02J-563	M.G.RESISTOR	56K	1/10W
R253	NRSA02J-682	M.G.RESISTOR	6.8K	1/10W
R254	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R255	NRSA02J-470	M.G.RESISTOR	47	1/10W
R256	NRSA02J-272	M.G.RESISTOR	2.7K	1/10W
R257	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R258	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R301	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R302	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R303	NRSA02J-271	M.G.RESISTOR	270	1/10W
R304	NRSA02J-183	M.G.RESISTOR	18K	1/10W
R305	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R306	NRSA02J-221	M.G.RESISTOR	220	1/10W
R307	NRVA02D-1501	M.F.RESISTOR	1.50K	1/10W
R308	NRVA02D-4700	M.F.RESISTOR	470	1/10W
R309	NRVA02D-1000	M.F.RESISTOR	100	1/10W
R310	NRVA02D-39R0	M.F.RESISTOR	39.0	1/10W
R311	NRVA02D-47R0	M.F.RESISTOR	47.0	1/10W
R312	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R313	NRVA02D-3301	M.F.RESISTOR	3.30K	1/10W
R314	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R315	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R316	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R317	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R318	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R323	NRSA02J-221	M.G.RESISTOR	220	1/10W
R324	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R325	NRVA02D-2701	M.F.RESISTOR	2.70K	1/10W
R326	NRSA02J-101	M.G.RESISTOR	100	1/10W
R327	NRVA02D-3301	M.F.RESISTOR	3.30K	1/10W
R328	NRSA02J-101	M.G.RESISTOR	100	1/10W
R329	NRSA02J-101	M.G.RESISTOR	100	1/10W
R330	NRVA02D-3301	M.F.RESISTOR	3.30K	1/10W
R331	NRSA02J-221	M.G.RESISTOR	220	1/10W

Symbol No.	Part No.	Part Name	Description	
R332	NRVA02D-1801	M.F.RESISTOR	1.80K	1/10W
R334	NRSA02J-221	M.G.RESISTOR	220	1/10W
R335	NRVA02D-2201	M.F.RESISTOR	2.20K	1/10W
R336	NRVA02D-1203	M.F.RESISTOR	120K	1/10W
R337	NRVA02D-8202	M.F.RESISTOR	82.0K	1/10W
R338	NRSA02J-0R0	M.G.RESISTOR	0	1/10W
R339	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R340	NRSA02J-221	M.G.RESISTOR	220	1/10W
R341	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R342	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R343	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R344	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R345	NRSA02J-153	M.G.RESISTOR	15K	1/10W
R346	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R348	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R349	NRVA02D-1002	M.F.RESISTOR	10.0K	1/10W
R350	NRVA02D-6800	M.F.RESISTOR	680	1/10W
R351	NRVA02D-5601	M.F.RESISTOR	5.60K	1/10W
R352	NRSA02J-563	M.G.RESISTOR	56K	1/10W
R353	NRSA02J-682	M.G.RESISTOR	6.8K	1/10W
R354	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R355	NRSA02J-470	M.G.RESISTOR	47	1/10W
R356	NRSA02J-272	M.G.RESISTOR	2.7K	1/10W
R357	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
VR1	NVP1415-103	TRIM.RESISTOR	BLACK	LEVEL
VR101	NVP1415-202	TRIM.RESISTOR	B.IN	GAIN
VR102	NVP1415-103	TRIM.RESISTOR	B.FLARE	
VR201	NVP1415-102	TRIM.RESISTOR	G.IN	GAIN
VR202	NVP1415-103	TRIM.RESISTOR	G.FLARE	
VR301	NVP1415-202	TRIM.RESISTOR	R.IN	GAIN
VR302	NVP1415-103	TRIM.RESISTOR	R.FLARE	
C1	NCB21EK-473	CER.CAPACITOR	0.047	25V
C3	NEH90JM-336	E.CAPACITOR	33	6.3V
C5	NCB21EK-473	CER.CAPACITOR	0.047	25V
C6	NCB21EK-473	CER.CAPACITOR	0.047	25V
C7	NCB21EK-473	CER.CAPACITOR	0.047	25V
C8	NCT03CH-101	CER.CAPACITOR	100P	50V
C9	NCB21EK-473	CER.CAPACITOR	0.047	25V
C10	NEA11AM-227	E.CAPACITOR	220	10V
C11	NEA10JM-337	E.CAPACITOR	330	6.3V
C12	QEXA1CM-107	E.CAPACITOR	100	16V
C101	NCB21EK-473	CER.CAPACITOR	0.047	25V
C102	NCT03CH-7R0	CER.CAPACITOR	7.0P	50V
C103	NCB21EK-473	CER.CAPACITOR	0.047	25V
C106	NCT03CH-100	CER.CAPACITOR	10P	50V
C107	NEA11AM-227	E.CAPACITOR	220	10V
C108	NCB21EK-473	CER.CAPACITOR	0.047	25V
C110	NEF11VM-104	TAN.CAPACITOR	0.10	35V
C111	NCT03CH-470	CER.CAPACITOR	47P	50V
C112	NEH90JM-336	E.CAPACITOR	33	6.3V
C114	NEN21AM-106	NP.CAPACITOR	10	10V
C115	NCB21EK-473	CER.CAPACITOR	0.047	25V
C116	NCB21EK-473	CER.CAPACITOR	0.047	25V
C118	NCT03CH-470	CER.CAPACITOR	47P	50V
C119	NEN11HM-105	NP.CAPACITOR	1.0	50V
C120	NEF11AM-225	TAN.CAPACITOR	2.2	10V
C121	NEF11AM-225	TAN.CAPACITOR	2.2	10V

[PR1]

Symbol No.	Part No.	Part Name	Description
C201	NCB21EK-473	CER.CAPACITOR	0.047 25V
C202	NCT03CH-7R0	CER.CAPACITOR	7.0P 50V
C203	NCB21EK-473	CER.CAPACITOR	0.047 25V
C210	NEF11VM-104	TAN.CAPACITOR	0.10 35V
C211	NCT03CH-470	CER.CAPACITOR	47P 50V
C212	NEH90JM-336	E.CAPACITOR	33 6.3V
C214	NEN21AM-106	NP.CAPACITOR	10 10V
C215	NCB21EK-473	CER.CAPACITOR	0.047 25V
C216	NCB21EK-473	CER.CAPACITOR	0.047 25V
C218	NCT03CH-470	CER.CAPACITOR	47P 50V
C219	NEN11HM-105	NP.CAPACITOR	1.0 50V
C301	NCB21EK-473	CER.CAPACITOR	0.047 25V
C302	NCT03CH-7R0	CER.CAPACITOR	7.0P 50V
C303	NCB21EK-473	CER.CAPACITOR	0.047 25V
C306	NCT03CH-100	CER.CAPACITOR	10P 50V
C307	NEA11AM-227	E.CAPACITOR	220 10V
C308	NCB21EK-473	CER.CAPACITOR	0.047 25V
C310	NEF11VM-104	TAN.CAPACITOR	0.10 35V
C311	NCT03CH-470	CER.CAPACITOR	47P 50V
C312	NEH90JM-336	E.CAPACITOR	33 6.3V
C314	NEN21AM-106	NP.CAPACITOR	10 10V
C315	NCB21EK-473	CER.CAPACITOR	0.047 25V
C316	NCB21EK-473	CER.CAPACITOR	0.047 25V
C318	NCT03CH-470	CER.CAPACITOR	47P 50V
C319	NEN11HM-105	NP.CAPACITOR	1.0 50V
C320	NEF11AM-225	TAN.CAPACITOR	2.2 10V
C321	NEF11AM-225	TAN.CAPACITOR	2.2 10V
L1	SSV1330-150	COIL	15μH
CN4	SSV1321-010	CONNECTOR	10PIN
CN7	SSV1321-020	CONNECTOR	20PIN
TP1	SCV1880-001	TEST POINT	
TP101	SCV1880-001	TEST POINT	
TP102	SCV1880-001	TEST POINT	
TP201	SCV1880-001	TEST POINT	
TP202	SCV1880-001	TEST POINT	
TP301	SCV1880-001	TEST POINT	
TP302	SCV1880-001	TEST POINT	

6.6 PR2 BOARD ASSEMBLY LIST 06

SCK2454-02-00A 06☐☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description
IC1	MC14053BF	I.C.(M)	MOTOROLA
IC2	MC74HC00AF	I.C.(M)	MOTOROLA
IC4	TC4S81F	I.C.(M)	TOSHIBA
Q1	MSC3930(B)	TRANSISTOR	MOTOROLA
Q2	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q3	MSC3930(B)	TRANSISTOR	MOTOROLA
Q4	MSC3930(B)	TRANSISTOR	MOTOROLA
Q101	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q102	MSC3930(B)	TRANSISTOR	MOTOROLA
Q103	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q105	MSC3930(B)	TRANSISTOR	MOTOROLA
Q106	MSC3930(B)	TRANSISTOR	MOTOROLA
Q107	MSC3930(B)	TRANSISTOR	MOTOROLA
Q108	MSC3930(B)	TRANSISTOR	MOTOROLA
Q109	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q110	MSC3930(B)	TRANSISTOR	MOTOROLA
Q111	MSC3930(B)	TRANSISTOR	MOTOROLA
Q112	MSC3930(B)	TRANSISTOR	MOTOROLA
Q113	MSC3930(B)	TRANSISTOR	MOTOROLA
Q114	2SK209(L)	F.E.T.	TOSHIBA
Q115	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q116	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q117	MSC3930(B)	TRANSISTOR	MOTOROLA
Q118	MSC3930(B)	TRANSISTOR	MOTOROLA
Q119	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q120	MSC3930(B)	TRANSISTOR	MOTOROLA
Q201	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q202	MSC3930(B)	TRANSISTOR	MOTOROLA
Q203	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q205	MSC3930(B)	TRANSISTOR	MOTOROLA
Q206	MSC3930(B)	TRANSISTOR	MOTOROLA
Q207	MSC3930(B)	TRANSISTOR	MOTOROLA
Q208	MSC3930(B)	TRANSISTOR	MOTOROLA
Q209	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q210	MSC3930(B)	TRANSISTOR	MOTOROLA
Q211	MSC3930(B)	TRANSISTOR	MOTOROLA
Q212	MSC3930(B)	TRANSISTOR	MOTOROLA
Q213	MSC3930(B)	TRANSISTOR	MOTOROLA
Q214	2SK209(L)	F.E.T.	TOSHIBA
Q215	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q216	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q217	MSC3930(B)	TRANSISTOR	MOTOROLA
Q218	MSC3930(B)	TRANSISTOR	MOTOROLA
Q220	MSC3930(B)	TRANSISTOR	MOTOROLA
Q301	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q302	MSC3930(B)	TRANSISTOR	MOTOROLA
Q303	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q305	MSC3930(B)	TRANSISTOR	MOTOROLA
Q306	MSC3930(B)	TRANSISTOR	MOTOROLA
Q307	MSC3930(B)	TRANSISTOR	MOTOROLA
Q308	MSC3930(B)	TRANSISTOR	MOTOROLA
Q309	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q310	MSC3930(B)	TRANSISTOR	MOTOROLA
Q311	MSC3930(B)	TRANSISTOR	MOTOROLA
Q312	MSC3930(B)	TRANSISTOR	MOTOROLA
Q313	MSC3930(B)	TRANSISTOR	MOTOROLA
Q314	2SK209(L)	F.E.T.	TOSHIBA
Q315	2SA1532(BC)	TRANSISTOR	MATSUSHITA

Symbol No.	Part No.	Part Name	Description	
Q316	2SA1532(BC)	TRANSISTOR	MATSUSHITA	
Q317	MSC3930(B)	TRANSISTOR	MOTOROLA	
Q318	MSC3930(B)	TRANSISTOR	MOTOROLA	
Q320	MSC3930(B)	TRANSISTOR	MOTOROLA	
D101	MA742	DIODE	MATSUSHITA	
D102	MA742	DIODE	MATSUSHITA	
D201	MA742	DIODE	MATSUSHITA	
D202	MA742	DIODE	MATSUSHITA	
D301	MA742	DIODE	MATSUSHITA	
D302	MA742	DIODE	MATSUSHITA	
R2	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R3	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R4	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R5	NRSA02J-273	M.G.RESISTOR	27K	1/10W
R6	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R7	NRSA02J-332	M.G.RESISTOR	3.3K	1/10W
R8	NRSA02J-221	M.G.RESISTOR	220	1/10W
R9	NRSA02J-332	M.G.RESISTOR	3.3K	1/10W
R10	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R11	NRSA02J-272	M.G.RESISTOR	2.7K	1/10W
R12	NRSA02J-332	M.G.RESISTOR	3.3K	1/10W
R13	NRSA02J-822	M.G.RESISTOR	8.2K	1/10W
R101	NRVA02D-6800	M.F.RESISTOR	680	1/10W
R102	NRVA02D-82R0	M.F.RESISTOR	82.0	1/10W
R103	NRSA02J-562	M.G.RESISTOR	5.6K	1/10W
R104	NRSA02J-682	M.G.RESISTOR	6.8K	1/10W
R105	NRSA02J-221	M.G.RESISTOR	220	1/10W
R107	NRVA02D-3900	M.F.RESISTOR	390	1/10W
R108	NRVA02D-1800	M.F.RESISTOR	180	1/10W
R109	NRVA02D-3900	M.F.RESISTOR	390	1/10W
R110	NRVA02D-2200	M.F.RESISTOR	220	1/10W
R111	NRVA02D-1202	M.F.RESISTOR	12.0K	1/10W
R112	NRSA02J-123	M.G.RESISTOR	12K	1/10W
R113	NRSA02J-391	M.G.RESISTOR	390	1/10W
R114	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R115	NRSA02J-123	M.G.RESISTOR	12K	1/10W
R116	NRSA02J-471	M.G.RESISTOR	470	1/10W
R117	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R118	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R119	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R120	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R121	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R122	NRSA02J-822	M.G.RESISTOR	8.2K	1/10W
R123	NRSA02J-332	M.G.RESISTOR	3.3K	1/10W
R124	NRVA02D-2201	M.F.RESISTOR	2.20K	1/10W
R125	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R126	NRSA02J-221	M.G.RESISTOR	220	1/10W
R127	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R128	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R129	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R130	NRSA02J-221	M.G.RESISTOR	220	1/10W
R131	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R132	NRSA02J-221	M.G.RESISTOR	220	1/10W
R133	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R134	NRSA02J-330	M.G.RESISTOR	33	1/10W
R135	NRSA02J-221	M.G.RESISTOR	220	1/10W
R136	NRSA02J-332	M.G.RESISTOR	3.3K	1/10W

Symbol No.	Part No.	Part Name	Description	
R138	NRSA02J-0R0	M.G.RESISTOR	0	1/10W
R141	NRSA02J-682	M.G.RESISTOR	6.8K	1/10W
R142	NRSA02J-270	M.G.RESISTOR	27	1/10W
R143	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R201	NRVA02D-6800	M.F.RESISTOR	680	1/10W
R202	NRVA02D-82R0	M.F.RESISTOR	82.0	1/10W
R203	NRSA02J-562	M.G.RESISTOR	5.6K	1/10W
R204	NRSA02J-682	M.G.RESISTOR	6.8K	1/10W
R205	NRSA02J-221	M.G.RESISTOR	220	1/10W
R207	NRVA02D-3900	M.F.RESISTOR	390	1/10W
R208	NRVA02D-1800	M.F.RESISTOR	180	1/10W
R209	NRVA02D-3900	M.F.RESISTOR	390	1/10W
R210	NRVA02D-2200	M.F.RESISTOR	220	1/10W
R211	NRVA02D-1202	M.F.RESISTOR	12.0K	1/10W
R212	NRSA02J-123	M.G.RESISTOR	12K	1/10W
R213	NRSA02J-391	M.G.RESISTOR	390	1/10W
R214	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R215	NRSA02J-123	M.G.RESISTOR	12K	1/10W
R216	NRSA02J-471	M.G.RESISTOR	470	1/10W
R217	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R218	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R219	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R220	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R221	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R222	NRSA02J-822	M.G.RESISTOR	8.2K	1/10W
R223	NRSA02J-332	M.G.RESISTOR	3.3K	1/10W
R224	NRVA02D-2201	M.F.RESISTOR	2.20K	1/10W
R225	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R226	NRSA02J-221	M.G.RESISTOR	220	1/10W
R227	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R228	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R229	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R230	NRSA02J-221	M.G.RESISTOR	220	1/10W
R231	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R232	NRSA02J-221	M.G.RESISTOR	220	1/10W
R233	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R234	NRSA02J-330	M.G.RESISTOR	33	1/10W
R235	NRSA02J-221	M.G.RESISTOR	220	1/10W
R240	NRSA02J-330	M.G.RESISTOR	33	1/10W
R241	NRSA02J-682	M.G.RESISTOR	6.8K	1/10W
R242	NRSA02J-270	M.G.RESISTOR	27	1/10W
R243	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R301	NRVA02D-6800	M.F.RESISTOR	680	1/10W
R302	NRVA02D-82R0	M.F.RESISTOR	82.0	1/10W
R303	NRSA02J-562	M.G.RESISTOR	5.6K	1/10W
R304	NRSA02J-682	M.G.RESISTOR	6.8K	1/10W
R305	NRSA02J-221	M.G.RESISTOR	220	1/10W
R307	NRVA02D-3900	M.F.RESISTOR	390	1/10W
R308	NRVA02D-1800	M.F.RESISTOR	180	1/10W
R309	NRVA02D-3900	M.F.RESISTOR	390	1/10W
R310	NRVA02D-2200	M.F.RESISTOR	220	1/10W
R311	NRVA02D-1202	M.F.RESISTOR	12.0K	1/10W
R312	NRSA02J-123	M.G.RESISTOR	12K	1/10W
R313	NRSA02J-391	M.G.RESISTOR	390	1/10W
R314	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R315	NRSA02J-123	M.G.RESISTOR	12K	1/10W
R316	NRSA02J-471	M.G.RESISTOR	470	1/10W
R317	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R318	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W

[PR2]

Symbol No.	Part No.	Part Name	Description	
R319	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R320	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R321	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R322	NRSA02J-822	M.G.RESISTOR	8.2K	1/10W
R323	NRSA02J-332	M.G.RESISTOR	3.3K	1/10W
R324	NRVA02D-2201	M.F.RESISTOR	2.20K	1/10W
R325	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R326	NRSA02J-221	M.G.RESISTOR	220	1/10W
R327	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R328	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R329	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R330	NRSA02J-221	M.G.RESISTOR	220	1/10W
R331	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R332	NRSA02J-221	M.G.RESISTOR	220	1/10W
R333	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R334	NRSA02J-330	M.G.RESISTOR	33	1/10W
R335	NRSA02J-221	M.G.RESISTOR	220	1/10W
R340	NRSA02J-330	M.G.RESISTOR	33	1/10W
R341	NRSA02J-682	M.G.RESISTOR	6.8K	1/10W
R342	NRSA02J-270	M.G.RESISTOR	27	1/10W
R343	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
VR1	NVP1416-202	TRIM.RESISTOR	KNEE	
VR2	NVP1416-202	TRIM.RESISTOR	WHITE	CLIP
VR101	NVP1416-102	TRIM.RESISTOR	B.GAMMA	
VR102	NVP1416-102	TRIM.RESISTOR	B.GAIN	
VR201	NVP1416-102	TRIM.RESISTOR	G.GAMMA	
VR202	NVP1416-102	TRIM.RESISTOR	G.GAIN	
VR301	NVP1416-102	TRIM.RESISTOR	R.GAMMA	
VR302	NVP1416-102	TRIM.RESISTOR	R.GAIN	
C1	NEH90JM-336	E.CAPACITOR	33	6.3V
C2	NCB10JM-335	CER.CAPACITOR	3.3	6.3V
C3	NCB21EK-473	CER.CAPACITOR	0.047	25V
C4	NEN10JM-476	NP.CAPACITOR	47	6.3V
C5	NCT03CH-680	CER.CAPACITOR	68P	50V
C6	NCT03CH-470	CER.CAPACITOR	47P	50V
C7	NCB21EK-473	CER.CAPACITOR	0.047	25V
C8	NCB21EK-473	CER.CAPACITOR	0.047	25V
C9	NEA11AM-227	E.CAPACITOR	220	10V
C10	NEA10JM-337	E.CAPACITOR	330	6.3V
C11	NEA10JM-337	E.CAPACITOR	330	6.3V
C104	NEH90JM-336	E.CAPACITOR	33	6.3V
C105	NCB21EK-473	CER.CAPACITOR	0.047	25V
C106	NCB21EK-473	CER.CAPACITOR	0.047	25V
C107	NCT03CH-470	CER.CAPACITOR	47P	50V
C108	NCB21EK-473	CER.CAPACITOR	0.047	25V
C109	NCB21EK-473	CER.CAPACITOR	0.047	25V
C110	NCB21EK-473	CER.CAPACITOR	0.047	25V
C204	NEH90JM-336	E.CAPACITOR	33	6.3V
C205	NCB21EK-473	CER.CAPACITOR	0.047	25V
C206	NCB21EK-473	CER.CAPACITOR	0.047	25V
C207	NCT03CH-470	CER.CAPACITOR	47P	50V
C208	NCB21EK-473	CER.CAPACITOR	0.047	25V
C209	NCB21EK-473	CER.CAPACITOR	0.047	25V
C210	NCB21EK-473	CER.CAPACITOR	0.047	25V
C302	NCB21EK-473	CER.CAPACITOR	0.047	25V
C304	NEH90JM-336	E.CAPACITOR	33	6.3V
C305	NCB21EK-473	CER.CAPACITOR	0.047	25V

Symbol No.	Part No.	Part Name	Description	
C306	NCB21EK-473	CER.CAPACITOR	0.047	25V
C307	NCT03CH-470	CER.CAPACITOR	47P	50V
C308	NCB21EK-473	CER.CAPACITOR	0.047	25V
C309	NCB21EK-473	CER.CAPACITOR	0.047	25V
C310	NCB21EK-473	CER.CAPACITOR	0.047	25V
L101	SCV1950-220	PEAKING COIL	22μH	
L102	SCV1950-470	PEAKING COIL	47μH	
L201	SCV1950-220	PEAKING COIL	22μH	
L202	SCV1950-470	PEAKING COIL	47μH	
L301	SCV1950-220	PEAKING COIL	22μH	
L302	SCV1950-470	PEAKING COIL	47μH	
DL101	SCV2720-001	DELAY LINE	180nsec	
DL201	SCV2720-001	DELAY LINE	180nsec	
DL301	SCV2720-001	DELAY LINE	180nsec	
S1	SSV2664	SLIDE SWITCH	NOISE SLICE	
CN5	SSV1321-020	CONNECTOR	20PIN	
CN6	SCV1770-012	CONNECTOR	12PIN	
CN7	SSV1321-020	CONNECTOR	20PIN	
CN8	SSV1321-015	CONNECTOR	15PIN	
CN9	SCV1770-007	CONNECTOR	7PIN	
CN10	SCV2097-060	CONNECTOP	60PIN	
CN24	SCV1770-006	CONNECTOR	6PIN	
TP1	SCV1880-001	TEST POINT		
TP101	SCV1880-001	TEST POINT		
TP102	SCV1880-001	TEST POINT		
TP201	SCV1880-001	TEST POINT		
TP202	SCV1880-001	TEST POINT		
TP301	SCV1880-001	TEST POINT		
TP302	SCV1880-001	TEST POINT		

6.7 CC BOARD ASSEMBLY LIST 07
SCK2454-04-N0A
SCK2454-04-P0A 07□□□□□□

Symbol No.	Part No.	Part Name	Description
IC1	TC4W53F	I.C.(M)	TOSHIBA
IC101	CXL5504M	I.C.(M)	SONY
IC102	MC14577CF	I.C.(M)	MOTOROLA
IC201	CXL5504M	I.C.(M)	SONY
IC301	TC7S04F	I.C.(M)	TOSHIBA
IC302	TC74HC74AF	I.C.(M)	TOSHIBA
Q1	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q2	MSC3930(B)	TRANSISTOR	MOTOROLA
Q3	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q4	MSC3930(B)	TRANSISTOR	MOTOROLA
Q5	MSC3930(B)	TRANSISTOR	MOTOROLA
Q6	MSC3930(B)	TRANSISTOR	MOTOROLA
Q7	MSC3930(B)	TRANSISTOR	MOTOROLA
Q8	MSC3930(B)	TRANSISTOR	MOTOROLA
Q9	MSC3930(B)	TRANSISTOR	MOTOROLA
Q10	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q12	MSC3930(B)	TRANSISTOR	MOTOROLA
Q13	2SJ163(Q.R)	F.E.T.	MATSUSHITA
Q14	MSC3930(B)	TRANSISTOR	MOTOROLA
Q15	DTC124EU	TRANSISTOR	ROHM
Q18	2SD1820(QR)	TRANSISTOR	MATSUSHITA
Q101	MSC3930(B)	TRANSISTOR	MOTOROLA
Q102	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q103	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q104	MSC3930(B)	TRANSISTOR	MOTOROLA
Q105	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q201	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q202	MSC3930(B)	TRANSISTOR	MOTOROLA
D1	MA142A	DIODE	MATSUSHITA
D2	HSM88AS	DIODE	HITACHI
D3	HSM88AS	DIODE	HITACHI
R1	NRVA02D-2202	M.F.RESISTOR	22.0K 1/10W
R2	NRVA02D-1801	M.F.RESISTOR	1.80K 1/10W
R4	NRVA02D-4701	M.F.RESISTOR	4.70K 1/10W
R5	NRVA02D-2202	M.F.RESISTOR	22.0K 1/10W
R6	NRVA02D-3902	M.F.RESISTOR	39.0K 1/10W
R7	NRSA02J-0R0	M.G.RESISTOR	0 1/10W
R8	NRSA02J-682	M.G.RESISTOR	6.8K 1/10W
R9	NRSA02J-562	M.G.RESISTOR	5.6K 1/10W
R10	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R11	NRVA02D-3901	M.F.RESISTOR	3.90K 1/10W
R12	NRSA02J-222	M.G.RESISTOR	2.2K 1/10W
R13	NRSA02J-272	M.G.RESISTOR	2.7K 1/10W
R14	NRSA02J-222	M.G.RESISTOR	2.2K 1/10W
R15	NRVA02D-1801	M.F.RESISTOR	1.80K 1/10W
R16	NRVA02D-2202	M.F.RESISTOR	22.0K 1/10W
R17	NRSA02J-332	M.G.RESISTOR	3.3K 1/10W
R18	NRSA02J-331	M.G.RESISTOR	330 1/10W
R19	NRSA02J-221	M.G.RESISTOR	220 1/10W
R20	NRSA02J-562	M.G.RESISTOR	5.6K 1/10W
R21	NRSA02J-332	M.G.RESISTOR	3.3K 1/10W
R22	NRSA02J-101	M.G.RESISTOR	100 1/10W
R23	NRVA02D-4701	M.F.RESISTOR	4.70K 1/10W
R25	NRVA02D-6800	M.F.RESISTOR	680 1/10W
R27	NRVA02D-6800	M.F.RESISTOR	680 1/10W

Symbol No.	Part No.	Part Name	Description
R28	NRSA02J-222	M.G.RESISTOR	2.2K 1/10W
R29	NRSA02J-821	M.G.RESISTOR	820 1/10W
R30	NRSA02J-821	M.G.RESISTOR	820 1/10W
R31	NRVA02D-2700	M.F.RESISTOR	270 1/10W
R32	NRVA02D-2702	M.F.RESISTOR	27.0K 1/10W
R33	NRSA02J-153	M.G.RESISTOR	15K 1/10W
R34	NRSA02J-153	M.G.RESISTOR	15K 1/10W
R35	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R36	NRSA02J-222	M.G.RESISTOR	2.2K 1/10W
R37	NRVA02D-3301	M.F.RESISTOR	3.30K 1/10W
R38	NRSA02J-473	M.G.RESISTOR	47K 1/10W
R39	NRVA02D-3902	M.F.RESISTOR	39.0K 1/10W
R41	NRVA02D-2202	M.F.RESISTOR	22.0K 1/10W
R42	NRSA02J-332	M.G.RESISTOR	3.3K 1/10W
R43	NRVA02D-6801	M.F.RESISTOR	6.80K 1/10W
R44	NRVA02D-10R0	M.F.RESISTOR	10.0 1/10W
R45	NRVA02D-10R0	M.F.RESISTOR	10.0 1/10W
R46	NRVA02D-4701	M.F.RESISTOR	4.70K 1/10W
R47	NRVA02D-6801	M.F.RESISTOR	6.80K 1/10W
R48	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R49	NRVA02D-4701	M.F.RESISTOR	4.70K 1/10W
R50	NRSA02J-104	M.G.RESISTOR	100K 1/10W
R51	NRVA02D-2202	M.F.RESISTOR	22.0K 1/10W
R52	NRSA02J-272	M.G.RESISTOR	2.7K 1/10W
R53	NRVA02D-68R0	M.F.RESISTOR	68.0 1/10W
R54	NRVA02D-2202	M.F.RESISTOR	22.0K 1/10W
R55	NRSA02J-153	M.G.RESISTOR	15K 1/10W
R56	NRVA02D-5600	M.F.RESISTOR	560 1/10W
R57	NRSA02J-223	M.G.RESISTOR	22K 1/10W
R60	NRSA02J-0R0	M.G.RESISTOR	0 1/10W
R101	NRVA02D-2202	M.F.RESISTOR	22.0K 1/10W
R102	NRVA02D-1801	M.F.RESISTOR	1.80K 1/10W
R103	NRSA02J-471	M.G.RESISTOR	470 1/10W
R104	NRVA02D-2202	M.F.RESISTOR	22.0K 1/10W
R105	NRSA02J-222	M.G.RESISTOR	2.2K 1/10W
R106	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R107	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R108	NRVA02D-1801	M.F.RESISTOR	1.80K 1/10W
R109	NRSA02J-105	M.G.RESISTOR	1.0M 1/10W
R110	NRSA02J-103	M.G.RESISTOR	10K 1/10W
R111	NRVA02D-2202	M.F.RESISTOR	22.0K 1/10W
R112	NRVA02D-1801	M.F.RESISTOR	1.80K 1/10W
R117	NRSA02J-221	M.G.RESISTOR	220 1/10W
R118	NRSA02J-222	M.G.RESISTOR	2.2K 1/10W
R119	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R120	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R121	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R122	NRVA02D-5600	M.F.RESISTOR	560 1/10W
R123	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R124	NRVA02D-1801	M.F.RESISTOR	1.80K 1/10W
R125	NRSA02J-100	M.G.RESISTOR	10 1/10W
R126	NRSA02J-0R0	M.G.RESISTOR	0 1/10W (E)
R201	NRVA02D-1801	M.F.RESISTOR	1.80K 1/10W
R202	NRSA02J-105	M.G.RESISTOR	1.0M 1/10W
R203	NRSA02J-103	M.G.RESISTOR	10K 1/10W
R204	NRVA02D-2202	M.F.RESISTOR	22.0K 1/10W
R205	NRSA02J-473	M.G.RESISTOR	47K 1/10W
R206	NRSA02J-222	M.G.RESISTOR	2.2K 1/10W
R207	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W

[CC]

Symbol No.	Part No.	Part Name	Description
R208	NRSA02J-0R0	M.G.RESISTOR	0 1/10W(E)
R301	NRSA02J-104	M.G.RESISTOR	100K 1/10W
R302	NRSA02J-0R0	M.G.RESISTOR	0 1/10W
VR1	NVP1416-502	TRIM.RESISTOR	V.BAL
VR2	NVP1416-202	TRIM.RESISTOR	V.LEVEL
VR3	NVP1416-202	TRIM.RESISTOR	H.LEVEL
VR101	NVP1416-202	TRIM.RESISTOR	1HG.LEVEL
C1	NEH91CM-106	E.CAPACITOR	10 16V
C7	NEH90GM-476	E.CAPACITOR	47 4V
C8	NCT03CH-100	CER.CAPACITOR	10P 50V
C9	NCT03CH-560	CER.CAPACITOR	56P 50V
C10	NCT03CH-330	CER.CAPACITOR	33P 50V
C11	NEF11CM-105	TAN.CAPACITOR	1.0 16V
C12	NEN21AM-106	NP.CAPACITOR	10 10V
C13	NEA11AM-227	E.CAPACITOR	220 10V
C14	NCB21EK-473	CER.CAPACITOR	0.047 25V
C15	NEH90GM-476	E.CAPACITOR	47 4V
C16	NEH90JM-336	E.CAPACITOR	33 6.3V
C17	NCB21EK-473	CER.CAPACITOR	0.047 25V
C18	NEH91CM-106	E.CAPACITOR	10 16V
C19	NCB21EK-473	CER.CAPACITOR	0.047 25V
C21	NEN21AM-106	NP.CAPACITOR	10 10V
C22	NEH91CM-106	E.CAPACITOR	10 16V
C23	NCB21EK-473	CER.CAPACITOR	0.047 25V
C101	NEH91CM-106	E.CAPACITOR	10 16V
C103	NEH91CM-476	E.CAPACITOR	47 16V
C105	NCB21EK-473	CER.CAPACITOR	0.047 25V
C106	NEF11CM-105	TAN.CAPACITOR	1.0 16V
C107	NEF11AM-156	TAN.CAPACITOR	15 10V
C108	NEF11CM-105	TAN.CAPACITOR	1.0 16V
C109	NCB21EK-473	CER.CAPACITOR	0.047 25V
C110	NCB21HK-102	CER.CAPACITOR	1000P 50V
C111	NCB21EK-473	CER.CAPACITOR	0.047 25V
C112	NEF11AM-475	TAN.CAPACITOR	4.7 10V
C113	NCB21EK-473	CER.CAPACITOR	0.047 25V
C114	NEH90JM-107	E.CAPACITOR	100 6.3V
C122	NCB21EK-473	CER.CAPACITOR	0.047 25V
C123	NEH90GM-476	E.CAPACITOR	47 4V
C124	NCB21EK-473	CER.CAPACITOR	0.047 25V
C125	NCT03CH-100	CER.CAPACITOR	10P 50V
C201	NEF11CM-105	TAN.CAPACITOR	1.0 16V
C202	NEF11AM-156	TAN.CAPACITOR	15 10V
C203	NEF11CM-105	TAN.CAPACITOR	1.0 16V
C204	NCB21EK-473	CER.CAPACITOR	0.047 25V
C205	NCB21EK-473	CER.CAPACITOR	0.047 25V
C206	NEF11AM-475	TAN.CAPACITOR	4.7 10V
C207	NCB21EK-473	CER.CAPACITOR	0.047 25V
C208	NEH90JM-336	E.CAPACITOR	33 6.3V
C301	NEF11AM-475	TAN.CAPACITOR	4.7 10V
C302	NCB21EK-473	CER.CAPACITOR	0.047 25V
C303	NCB21EK-473	CER.CAPACITOR	0.047 25V
C304	NCB21EK-473	CER.CAPACITOR	0.047 25V
L2	SCV1950-121	PEAKING COIL	120μH
L3	SSV1330-150	COIL	15μH
L101	SSV1330-150	COIL	15μH

Symbol No.	Part No.	Part Name	Description
L201	SSV1330-150	COIL	15μH
L301	SSV1330-150	COIL	15μH
DL1	SCV2528-001	DELAY LINE	150nsec
DL101	SCV2517-001	DELAY LINE	100nsec (U)
DL102	SCV2517-001	DELAY LINE	100nsec (U)
	SCV2760-001	DELAY LINE	70nsec (E)
DL201	SCV2517-001	DELAY LINE	100nsec
DL202	SCV2528-001	DELAY LINE	150nsec (U)
S1	SSV2664	SLIDE SWITCH	CC ON/OFF
CN8	SSV1321-015	CONNECTOR	15pin
TP1	SCV1880-001	TEST POINT	
TP2	SCV1880-001	TEST POINT	
TP3	SCV1880-001	TEST POINT	
TP4	SCV1880-001	TEST POINT	
TP5	SCV1880-001	TEST POINT	
TP6	SCV1880-001	TEST POINT	
TP7	SCV1880-001	TEST POINT	

6.8 SE BOARD ASSEMBLY LIST $\boxed{0}\boxed{8}$
SCK2453-02-N0A
SCK2453-02-P0A $\boxed{0}\boxed{8}$☐☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description
IC1	CXD1217M	I.C.(M)	SONY
IC2	MC14053BF	I.C.(M)	MOTOROLA
IC3	MC74HC08AF	I.C.(M)	MOTOROLA
IC4	MC74HC4020FL1	I.C.(M)	MOTOROLA
IC5	MC74HC04AF	I.C.(M)	MOTOROLA
IC6	TC4S81F	I.C.(M)	TOSHIBA
IC7	MC74HC4538AF	I.C.(M)	MOTOROLA
IC8	TC4S81F	I.C.(M)	TOSHIBA
IC9	MC14577CF	I.C.(M)	MOTOROLA
IC10	MC14577CF	I.C.(M)	MOTOROLA
IC11	AN614	I.C.(M)	MATSUSHITA
IC12	AN614	I.C.(M)	MATSUSHITA
IC13	MC14053BF	I.C.(M)	MOTOROLA
IC14	MC14053BF	I.C.(M)	MOTOROLA
IC15	MC14577CF	I.C.(M)	MOTOROLA
IC16	MC14577CF	I.C.(M)	MOTOROLA
IC17	TC4S81F	I.C.(M)	TOSHIBA
IC201	MC14577CF	I.C.(M)	MOTOROLA
IC301	TC7SU04F	I.C.(M)	TOSHIBA
IC302	TC7W74FUTE12L	I.C.(M)	TOSHIBA
IC401	TC7SU04F	I.C.(M)	TOSHIBA (E)
Q1	MSC3930(B)	TRANSISTOR	MOTOROLA
Q2	MSC3930(B)	TRANSISTOR	MOTOROLA
Q3	MSC3930(B)	TRANSISTOR	MOTOROLA
Q4	2SK209(L)	F.E.T.	TOSHIBA
Q5	2SK209(L)	F.E.T.	TOSHIBA
Q6	MSC3930(B)	TRANSISTOR	MOTOROLA
Q7	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q8	MSC3930(B)	TRANSISTOR	MOTOROLA
Q9	DTC124EU	TRANSISTOR	ROHM
Q201	2SK209(L)	F.E.T.	TOSHIBA
Q202	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q203	MSC3930(B)	TRANSISTOR	MOTOROLA
D1	MA142A	DIODE	MATSUSHITA
D201	MA742	DIODE	MATSUSHITA
R1	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R2	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R3	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R4	NRVA02D-3301	M.F.RESISTOR	3.30K 1/10W
R5	NRVA02D-3301	M.F.RESISTOR	3.30K 1/10W
R6	NRVA02D-3301	M.F.RESISTOR	3.30K 1/10W
R7	NRVA02D-3900	M.F.RESISTOR	390 1/10W
R8	NRVA02D-3900	M.F.RESISTOR	390 1/10W
R9	NRVA02D-3900	M.F.RESISTOR	390 1/10W
R10	NRVA02D-2202	M.F.RESISTOR	22.0K 1/10W
R11	NRSA02J-474	M.G.RESISTOR	470K 1/10W
R12	NRSA02J-474	M.G.RESISTOR	470K 1/10W
R13	NRSA02J-474	M.G.RESISTOR	470K 1/10W
R14	NRVA02D-3302	M.F.RESISTOR	33.0K 1/10W (U)
	NRVA02D-3301	M.F.RESISTOR	3.30K 1/10W (E)
R15	NRVA02D-2202	M.F.RESISTOR	22.0K 1/10W (U)
	NRVA02D-2201	M.F.RESISTOR	2.20K 1/10W (E)
R16	NRVA02D-3301	M.F.RESISTOR	3.30K 1/10W
R17	NRVA02D-8200	M.F.RESISTOR	820 1/10W
R18	NRVA02D-5600	M.F.RESISTOR	560 1/10W

Symbol No.	Part No.	Part Name	Description
R19	NRVA02D-5600	M.F.RESISTOR	560 1/10W
R20	NRVA02D-3301	M.F.RESISTOR	3.30K 1/10W (U)
R21	NRVA02D-2202	M.F.RESISTOR	22.0K 1/10W (U)
R22	NRVA02D-4701	M.F.RESISTOR	4.70K 1/10W
R23	NRVA02D-3900	M.F.RESISTOR	390 1/10W
R24	NRVA02D-6800	M.F.RESISTOR	680 1/10W
R25	NRVA02D-2700	M.F.RESISTOR	270 1/10W
R26	NRVA02D-1801	M.F.RESISTOR	1.80K 1/10W
R27	NRVA02D-68R0	M.F.RESISTOR	68.0 1/10W
R28	NRVA02D-5600	M.F.RESISTOR	560 1/10W
R29	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R30	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R31	NRVA02D-6800	M.F.RESISTOR	680 1/10W
R32	NRVA02D-5600	M.F.RESISTOR	560 1/10W
R33	NRVA02D-3900	M.F.RESISTOR	390 1/10W
R34	NRVA02D-82R0	M.F.RESISTOR	82.0 1/10W
R35	NRVA02D-6802	M.F.RESISTOR	68.0K 1/10W
R36	NRVA02D-4701	M.F.RESISTOR	4.70K 1/10W
R37	NRVA02D-8201	M.F.RESISTOR	8.20K 1/10W
R38	NRVA02D-3300	M.F.RESISTOR	330 1/10W
R39	NRVA02D-1201	M.F.RESISTOR	1.20K 1/10W
R40	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R41	NRVA02D-2200	M.F.RESISTOR	220 1/10W
R42	NRVA02D-47R0	M.F.RESISTOR	47.0 1/10W
R43	NRVA02D-4700	M.F.RESISTOR	470 1/10W
R44	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R45	NRVA02D-1801	M.F.RESISTOR	1.80K 1/10W
R46	NRVA02D-4701	M.F.RESISTOR	4.70K 1/10W
R47	NRVA02D-4701	M.F.RESISTOR	4.70K 1/10W
R48	NRVA02D-1800	M.F.RESISTOR	180 1/10W
R49	NRVA02D-6800	M.F.RESISTOR	680 1/10W
R50	NRVA02D-2700	M.F.RESISTOR	270 1/10W
R51	NRVA02D-1801	M.F.RESISTOR	1.80K 1/10W (U)
	NRVA02D-2201	M.F.RESISTOR	2.20K 1/10W (E)
R52	NRVA02D-3302	M.F.RESISTOR	33.0K 1/10W
R53	NRVA02D-2201	M.F.RESISTOR	2.20K 1/10W (E)
R54	NRSA02J-330	M.G.RESISTOR	33 1/10W (E)
R55	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R56	NRSA02J-273	M.G.RESISTOR	27K 1/10W
R57	NRVA02D-4700	M.F.RESISTOR	470 1/10W
R58	NRVA02D-4700	M.F.RESISTOR	470 1/10W
R59	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R60	NRVA02D-1801	M.F.RESISTOR	1.80K 1/10W
R61	NRVA02D-4701	M.F.RESISTOR	4.70K 1/10W
R62	NRSA02J-152	M.G.RESISTOR	1.5K 1/10W
R63	NRSA02J-152	M.G.RESISTOR	1.5K 1/10W
R64	NRVA02D-4700	M.F.RESISTOR	470 1/10W (U)
	NRVA02D-8200	M.F.RESISTOR	820 1/10W (E)
R65	NRVA02D-3301	M.F.RESISTOR	3.30K 1/10W (U)
	NRVA02D-4701	M.F.RESISTOR	4.70K 1/10W (E)
R66	NRSA02J-104	M.G.RESISTOR	100K 1/10W
R67	NRSA02J-104	M.G.RESISTOR	100K 1/10W
R68	NRSA02J-105	M.G.RESISTOR	1.0M 1/10W
R69	NRSA02J-105	M.G.RESISTOR	1.0M 1/10W
R70	NRVA02D-8200	M.F.RESISTOR	820 1/10W
R71	NRVA02D-8200	M.F.RESISTOR	820 1/10W
R73	NRSA02J-392	M.G.RESISTOR	3.9K 1/10W
R74	NRSA02J-220	M.G.RESISTOR	22 1/10W
R75	NRSA02J-220	M.G.RESISTOR	22 1/10W

[SE]

Symbol No.	Part No.	Part Name	Description	
R76	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W(U)
	NRVA02D-2201	M.F.RESISTOR	2.20K	1/10W(E)
R78	NRVA02D-4700	M.F.RESISTOR	470	1/10W
R80	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R81	NRVA02D-3300	M.F.RESISTOR	330	1/10W(U)
	NRSA02J-151	M.G.RESISTOR	150	1/10W(E)
R82	NRVA02D-2202	M.F.RESISTOR	22.0K	1/10W
R83	NRVA02D-39R0	M.F.RESISTOR	39.0	1/10W
R84	NRVA02D-3301	M.F.RESISTOR	3.30K	1/10W
R85	NRVA02D-39R0	M.F.RESISTOR	39.0	1/10W
R86	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W(U)
	NRVA02D-2201	M.F.RESISTOR	2.20K	1/10W(E)
R87	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R88	NRSA02J-562	M.G.RESISTOR	5.6K	1/10W
R89	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R90	NRVA02D-3301	M.F.RESISTOR	3.30K	1/10W
R91	NRVA02D-4700	M.F.RESISTOR	470	1/10W
R92	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W(U)
	NRVA02D-2201	M.F.RESISTOR	2.20K	1/10W(E)
R93	NRVA02D-2202	M.F.RESISTOR	22.0K	1/10W
R94	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W(U)
	NRVA02D-2201	M.F.RESISTOR	2.20K	1/10W(E)
R97	NRVA02D-2700	M.F.RESISTOR	270	1/10W
R98	NRSA02J-101	M.G.RESISTOR	100	1/10W(E)
R99	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R100	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R101	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W(E)
R102	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R103	NRVA02D-68R0	M.F.RESISTOR	68.0	1/10W
R201	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R202	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R203	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R204	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R205	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R206	NRSA02J-152	M.G.RESISTOR	1.5K	1/10W
R207	NRSA02J-123	M.G.RESISTOR	12K	1/10W
R208	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R209	NRVA02D-8200	M.F.RESISTOR	820	1/10W
R210	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R211	NRVA02D-2202	M.F.RESISTOR	22.0K	1/10W
R212	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R213	NRSA02J-101	M.G.RESISTOR	100	1/10W
R214	NRSA02J-220	M.G.RESISTOR	22	1/10W
R215	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R216	NRSA02J-0R0	M.G.RESISTOR	0	1/10W
R301	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R302	NRSA02J-101	M.G.RESISTOR	100	1/10W
R303	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W(U)
	NRVA02D-2201	M.F.RESISTOR	2.20K	1/10W(E)
R305	NRVA02D-8201	M.F.RESISTOR	8.20K	1/10W(U)
	NRSA02J-123	M.G.RESISTOR	12K	1/10W(E)
R306	NRSA02J-101	M.G.RESISTOR	100	1/10W(U)
R307	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W(U)
R308	NRSA02J-123	M.G.RESISTOR	12K	1/10W(E)
R401	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W(E)
R402	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W(E)
R403	NRVA02D-2200	M.F.RESISTOR	220	1/10W(E)
R404	NRSA02J-151	M.G.RESISTOR	150	1/10W(E)
R405	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W(E)
R406	NRVA02D-2200	M.F.RESISTOR	220	1/10W(E)

Symbol No.	Part No.	Part Name	Description	
VR1	NVP1415-501	TRIM.RESISTOR	Y	LEVEL
VR2	NVP1415-102	TRIM.RESISTOR	QUAD	
VR3	NVP1415-201	TRIM.RESISTOR	CHROMA	BAL
VR4	NVP1415-501	TRIM.RESISTOR	CHROMA	LEVEL
VR5	NVP1415-102	TRIM.RESISTOR	B-Y	CARR.BAL
VR6	NVP1415-102	TRIM.RESISTOR	R-Y	CARR.BAL
VR201	NVP1415-103	TRIM.RESISTOR	VF	PEAKING LEV
C1	NCB21EK-473	CER.CAPACITOR	0.047	25V
C2	NCB21EK-473	CER.CAPACITOR	0.047	25V
C3	NCB21EK-473	CER.CAPACITOR	0.047	25V
C4	NCT03CH-680	CER.CAPACITOR	68P	50V(U)
	NCT03CH-121	CER.CAPACITOR	120P	50V(E)
C5	NCT03CH-121	CER.CAPACITOR	120P	50V
C6	NCT03CH-330	CER.CAPACITOR	33P	50V(U)
C7	NCT03CH-150	CER.CAPACITOR	15P	50V
C8	NCT03CH-7R0	CER.CAPACITOR	7.0P	50V
C9	NCB21EK-473	CER.CAPACITOR	0.047	25V
C10	NCB21EK-473	CER.CAPACITOR	0.047	25V
C11	NCB21EK-473	CER.CAPACITOR	0.047	25V
C12	NCT03CH-5R0	CER.CAPACITOR	5.0P	50V
C13	NCT03CH-121	CER.CAPACITOR	120P	50V
C14	NCT03CH-560	CER.CAPACITOR	56P	50V
C15	NEF11VM-104	TAN.CAPACITOR	0.10	35V
C16	NCT03CH-5R0	CER.CAPACITOR	5.0P	50V
C17	NCT03CH-150	CER.CAPACITOR	15P	50V(U)
	NCT03CH-121	CER.CAPACITOR	120P	50V(E)
C18	NEH90JM-336	E.CAPACITOR	33	6.3V
C19	NCT03CH-121	CER.CAPACITOR	120P	50V
C20	NCT03CH-560	CER.CAPACITOR	56P	50V
C21	NEF11VM-104	TAN.CAPACITOR	0.10	35V
C22	NCT03CH-101	CER.CAPACITOR	100P	50V
C23	NCB21EK-473	CER.CAPACITOR	0.047	25V
C24	NCB21EK-473	CER.CAPACITOR	0.047	25V
C25	NCB21EK-473	CER.CAPACITOR	0.047	25V
C26	NCB21EK-473	CER.CAPACITOR	0.047	25V
C27	NCB21EK-473	CER.CAPACITOR	0.047	25V
C28	NCB21EK-473	CER.CAPACITOR	0.047	25V
C29	NCB21EK-473	CER.CAPACITOR	0.047	25V
C30	NCB21HK-272	CER.CAPACITOR	2700P	50V
C31	NCB21EK-473	CER.CAPACITOR	0.047	25V
C32	NCB21EK-473	CER.CAPACITOR	0.047	25V
C33	NCT03CH-150	CER.CAPACITOR	15P	50V
C34	NCT03CH-330	CER.CAPACITOR	33P	50V
C35	NCT03UJ-560	CER.CAPACITOR	56P	50V(U)
	NCT03UJ-330	CER.CAPACITOR	33P	50V(E)
C36	NCB21EK-473	CER.CAPACITOR	0.047	25V
C37	NEA10JM-337	E.CAPACITOR	330	6.3V
C38	NCT03CH-151	CER.CAPACITOR	150P	50V
C39	NCT03CH-120	CER.CAPACITOR	12P	50V
C40	NCT03CH-220	CER.CAPACITOR	22P	50V
C41	NCB21EK-473	CER.CAPACITOR	0.047	25V
C42	NCB21HK-103	CER.CAPACITOR	0.010	50V
C43	NEA11AM-227	E.CAPACITOR	220	10V
C44	NEA10JM-337	E.CAPACITOR	330	6.3V
C45	NEA10JM-337	E.CAPACITOR	330	6.3V
C46	NEA10JM-337	E.CAPACITOR	330	6.3V
C47	NCB21EK-473	CER.CAPACITOR	0.047	25V
C48	NCB21EK-473	CER.CAPACITOR	0.047	25V
C49	NCB21EK-473	CER.CAPACITOR	0.047	25V

6.9 VIDEO BOARD ASSEMBLY LIST 09
SCK1142-N0A
SCK1142-P0A

09☐☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description
C50	NCB21EK-473	CER.CAPACITOR	0.047 25V
C51	NCB21EK-473	CER.CAPACITOR	0.047 25V
C52	NCB21EK-473	CER.CAPACITOR	0.047 25V
C53	NCB21EK-473	CER.CAPACITOR	0.047 25V
C54	NCT03CH-101	CER.CAPACITOR	100P 50V
C55	NCB21EK-473	CER.CAPACITOR	0.047 25V
C201	NEH90JM-336	E.CAPACITOR	33 6.3V
C202	NCT03CH-100	CER.CAPACITOR	10P 50V
C203	NEF11AM-225	TAN.CAPACITOR	2.2 10V
C301	NCB21EK-473	CER.CAPACITOR	0.047 25V
C302	NCB21EK-473	CER.CAPACITOR	0.047 25V
C303	NCB21EK-473	CER.CAPACITOR	0.047 25V
C304	NCB21EK-473	CER.CAPACITOR	0.047 25V
C401	NEF11CM-105	TAN.CAPACITOR	1.0 16V(E)
C402	NCB21EK-473	CER.CAPACITOR	0.047 25V(E)
C403	NCB21EK-473	CER.CAPACITOR	0.047 25V(E)
C404	NCB21EK-473	CER.CAPACITOR	0.047 25V(E)
C405	NCT03CH-101	CER.CAPACITOR	100P 50V(E)
C406	NCT03CH-7R0	CER.CAPACITOR	7.0P 50V(E)
C407	NCT03CH-330	CER.CAPACITOR	33P 50V(E)
VC401	NAT3112-200	TRIM.CAPACITOR	20P (E)
L1	SCV1950-560	PEAKING COIL	56μH
L2	SCV1950-820	PEAKING COIL	82μH
L3	SCV1950-220	PEAKING COIL	22μH
L401	SSV1330-150	COIL	15μH (E)
DL1	SCV2528-001	DELAY LINE	150nsec
DL2	SCV2528-001	DELAY LINE	150nsec
X401	CE42275-001	CRYSTAL	17.734475MHz (E)
S1	SSV2664	SLIDE SWITCH	TEST
CN2	PGZ01519-032	CONNECTOR	32PIN
TP1	SCV1880-001	TEST POINT	
TP2	SCV1880-001	TEST POINT	
TP3	SCV1880-001	TEST POINT	
TP4	SCV1880-001	TEST POINT	
TP5	SCV1880-001	TEST POINT	
TP6	SCV1880-001	TEST POINT	
TP7	SCV1880-001	TEST POINT	
TP8	SCV1880-001	TEST POINT	
TP9	SCV1880-001	TEST POINT	
TP10	SCV1880-001	TEST POINT	
TP11	SCV1880-001	TEST POINT	
TP12	SCV1880-001	TEST POINT	
WR1	SC43876-008	LUG WIRE	FOR CN2-31
BK1	PRD43842-01-01	BRACKET(PWB)	
SC1	SDST2606Z	SCREW	M2.6×6,FOR BK1

Symbol No.	Part No.	Part Name	Description
IC1	TC4094BF	I.C.(M)	TOSHIBA
IC2	TC4S81F	I.C.(M)	TOSHIBA
IC3	TC4S71F	I.C.(M)	TOSHIBA
IC4	AN3398	I.C.(M)	MATSUSHITA
IC5	NJM2285M	I.C.(M)	JRC
IC6	TA8733F	I.C.(M)	TOSHIBA
IC7	CXL5509M	I.C.(M)	SONY (U)
	CXL1506M	I.C.(M)	SONY (E)
IC8	VC2076MP	I.C.(M)	HITACHI
IC9	M52074FP	I.C.(M)	MITSUBISHI
IC10	AN2020S	I.C.(M)	MATSUSHITA
IC11	M5278L05M	I.C.(M)	MITSUBISHI
IC13	M52062AFP	I.C.(M)	MITSUBISHI
Q1	DTC144EU	TRANSISTOR	ROHM
Q2	2SA1577(QR)	TRANSISTOR	ROHM
Q3	DTC144EU	TRANSISTOR	ROHM
Q4	2SA1577(QR)	TRANSISTOR	ROHM
Q5	DTC144EU	TRANSISTOR	ROHM
Q6	2SA1577(QR)	TRANSISTOR	ROHM
Q7	DTC144EU	TRANSISTOR	ROHM
Q8	DTC144EU	TRANSISTOR	ROHM
Q9	DTC144EU	TRANSISTOR	ROHM
Q10	2SC4081(QRS)	TRANSISTOR	ROHM
Q18	2SA1576(QRS)	TRANSISTOR	ROHM
Q19	2SC4081(QRS)	TRANSISTOR	ROHM
Q24	2SA1576(QRS)	TRANSISTOR	ROHM
Q25	2SA1576(QRS)	TRANSISTOR	ROHM
Q26	2SC4081(QRS)	TRANSISTOR	ROHM
Q27	2SC4081(QRS)	TRANSISTOR	ROHM
Q28	2SA1576(QRS)	TRANSISTOR	ROHM
Q29	2SC4081(QRS)	TRANSISTOR	ROHM
Q30	2SC4081(QRS)	TRANSISTOR	ROHM
Q31	2SA1576(QRS)	TRANSISTOR	ROHM
Q32	2SC4081(QRS)	TRANSISTOR	ROHM
Q34	2SC4081(QRS)	TRANSISTOR	ROHM
Q35	2SC4081(QRS)	TRANSISTOR	ROHM
Q36	2SC4081(QRS)	TRANSISTOR	ROHM
Q37	2SC4081(QRS)	TRANSISTOR	ROHM
Q38	2SC4081(QRS)	TRANSISTOR	ROHM
Q39	2SC4081(QRS)	TRANSISTOR	ROHM
Q40	2SC4081(QRS)	TRANSISTOR	ROHM
Q41	2SC4081(QRS)	TRANSISTOR	ROHM
Q42	2SA1576(QRS)	TRANSISTOR	ROHM
Q43	DTC144EU	TRANSISTOR	ROHM (E)
Q44	2SA1576(QRS)	TRANSISTOR	ROHM
Q45	2SC4081(QRS)	TRANSISTOR	ROHM
Q46	2SA1576(QRS)	TRANSISTOR	ROHM
Q47	2SA1576(QRS)	TRANSISTOR	ROHM
Q48	DTC144EU	TRANSISTOR	ROHM
Q49	DTC144EU	TRANSISTOR	ROHM
Q50	2SC4081(QRS)	TRANSISTOR	ROHM
Q51	DTC144EU	TRANSISTOR	ROHM
Q52	DTC144EU	TRANSISTOR	ROHM
Q53	2SB709A(QR)	TRANSISTOR	MATSUSHITA
Q54	2SC4081(QRS)	TRANSISTOR	ROHM
Q55	2SA1576(QRS)	TRANSISTOR	ROHM
Q56	2SC4081(QRS)	TRANSISTOR	ROHM
Q57	2SA1576(QRS)	TRANSISTOR	ROHM

[VIDEO]

Symbol No.	Part No.	Part Name	Description
Q58	2SC4081(QRS)	TRANSISTOR	ROHM
Q59	DTC144EU	TRANSISTOR	ROHM
Q60	2SB709A(QR)	TRANSISTOR	MATSUSHITA
Q61	2SC4081(QRS)	TRANSISTOR	ROHM
Q62	2SA1576(QRS)	TRANSISTOR	ROHM
Q63	2SA1576(QRS)	TRANSISTOR	ROHM
Q64	DTC144EU	TRANSISTOR	ROHM
Q65	2SA1576(QRS)	TRANSISTOR	ROHM
Q67	2SC4081(QRS)	TRANSISTOR	ROHM
Q68	2SA1576(QRS)	TRANSISTOR	ROHM
Q69	2SC4081(QRS)	TRANSISTOR	ROHM
Q70	2SA1576(QRS)	TRANSISTOR	ROHM
Q71	2SA1576(QRS)	TRANSISTOR	ROHM
Q72	2SC4081(QRS)	TRANSISTOR	ROHM
Q73	2SC4081(QRS)	TRANSISTOR	ROHM
Q74	2SC4081(QRS)	TRANSISTOR	ROHM
Q75	2SA1576(QRS)	TRANSISTOR	ROHM
Q76	2SA1576(QRS)	TRANSISTOR	ROHM
Q77	2SC4081(QRS)	TRANSISTOR	ROHM
Q78	2SC4081(QRS)	TRANSISTOR	ROHM
Q79	2SA1576(QRS)	TRANSISTOR	ROHM
Q80	DTC144EU	TRANSISTOR	ROHM
Q81	DTC144EU	TRANSISTOR	ROHM
Q82	2SA1576(QRS)	TRANSISTOR	ROHM
Q83	DTC144EU	TRANSISTOR	ROHM
Q84	DTC144EU	TRANSISTOR	ROHM
Q85	DTA144EU	TRANSISTOR	ROHM (E)
Q86	DTA144EU	TRANSISTOR	ROHM (E)
Q87	DTA144EU	TRANSISTOR	ROHM
Q88	DTC144EU	TRANSISTOR	ROHM
Q89	DTA144EU	TRANSISTOR	ROHM (E)
Q90	DTC144EU	TRANSISTOR	ROHM (E)
Q91	DTC144EU	TRANSISTOR	ROHM
Q94	2SC4081(QRS)	TRANSISTOR	ROHM
Q95	2SC4081(QRS)	TRANSISTOR	ROHM
Q96	DTC144EU	TRANSISTOR	ROHM
Q97	DTC144EU	TRANSISTOR	ROHM
Q98	2SA1576(QRS)	TRANSISTOR	ROHM
Q99	DTC144EU	TRANSISTOR	ROHM
Q100	2SC4081(QRS)	TRANSISTOR	ROHM
Q101	DTC144EU	TRANSISTOR	ROHM
Q102	DTC144EU	TRANSISTOR	ROHM
Q103	DTC144EU	TRANSISTOR	ROHM (E)
Q104	DTC144EU	TRANSISTOR	ROHM
Q105	DTC144TU	TRANSISTOR	ROHM
Q106	DTC144EU	TRANSISTOR	ROHM
Q107	DTC144EU	TRANSISTOR	ROHM
Q108	DTA144EU	TRANSISTOR	ROHM
Q109	DTC144EU	TRANSISTOR	ROHM
Q110	DTC124EU	TRANSISTOR	ROHM
Q111	DTC124EU	TRANSISTOR	ROHM
Q112	2SC4081(QRS)	TRANSISTOR	ROHM
Q113	DTC144EU	TRANSISTOR	ROHM
Q114	2SA1576(QRS)	TRANSISTOR	ROHM
Q115	2SA1576(QRS)	TRANSISTOR	ROHM
Q116	2SC4081(QRS)	TRANSISTOR	ROHM
Q117	2SC4081(QRS)	TRANSISTOR	ROHM
Q118	2SC4081(QRS)	TRANSISTOR	ROHM
Q119	2SC4081(QRS)	TRANSISTOR	ROHM

Symbol No.	Part No.	Part Name	Description
Q120	2SA1576(QRS)	TRANSISTOR	ROHM
Q121	2SA1576(QRS)	TRANSISTOR	ROHM
Q122	2SC4081(QRS)	TRANSISTOR	ROHM
Q123	2SA1576(QRS)	TRANSISTOR	ROHM
Q124	2SC4081(QRS)	TRANSISTOR	ROHM
Q125	DTC144EU	TRANSISTOR	ROHM
Q126	DTC144EU	TRANSISTOR	ROHM
Q127	2SA1576(QRS)	TRANSISTOR	ROHM
Q128	2SC4081(QRS)	TRANSISTOR	ROHM
Q129	2SC4081(QRS)	TRANSISTOR	ROHM
Q130	2SC4081(QRS)	TRANSISTOR	ROHM
Q131	2SC4081(QRS)	TRANSISTOR	ROHM
Q132	2SA1576(QRS)	TRANSISTOR	ROHM
Q133	2SC4081(QRS)	TRANSISTOR	ROHM
Q134	2SC4081(QRS)	TRANSISTOR	ROHM
Q135	2SC4081(QRS)	TRANSISTOR	ROHM
Q136	2SC4081(QRS)	TRANSISTOR	ROHM
Q137	2SC4081(QRS)	TRANSISTOR	ROHM
Q138	2SC4081(QRS)	TRANSISTOR	ROHM
Q139	DTA144EU	TRANSISTOR	ROHM
Q140	2SA1576(QRS)	TRANSISTOR	ROHM
Q141	2SC4081(QRS)	TRANSISTOR	ROHM
Q143	2SC4081(QRS)	TRANSISTOR	ROHM
Q145	2SC4081(QRS)	TRANSISTOR	ROHM
Q146	DTC144EU	TRANSISTOR	ROHM
Q147	2SA1576(QRS)	TRANSISTOR	ROHM
Q148	2SA1576(QRS)	TRANSISTOR	ROHM
Q149	2SA1576(QRS)	TRANSISTOR	ROHM
Q150	2SC4081(QRS)	TRANSISTOR	ROHM
Q151	2SA1576(QRS)	TRANSISTOR	ROHM
Q152	2SC4081(QRS)	TRANSISTOR	ROHM
Q153	2SC4081(QRS)	TRANSISTOR	ROHM
Q154	2SA1576(QRS)	TRANSISTOR	ROHM
Q155	2SC4081(QRS)	TRANSISTOR	ROHM
Q156	2SK621	F.E.T.	MATSUSHITA
Q157	2SK621	F.E.T.	MATSUSHITA
Q158	2SK621	F.E.T.	MATSUSHITA
Q159	2SC4081(QRS)	TRANSISTOR	ROHM
Q160	DTC144EU	TRANSISTOR	ROHM
Q161	2SC4081(QRS)	TRANSISTOR	ROHM
Q162	2SC4081(QRS)	TRANSISTOR	ROHM
Q163	2SC4081(QRS)	TRANSISTOR	ROHM
Q164	DTC144EU	TRANSISTOR	ROHM
Q165	DTC144EU	TRANSISTOR	ROHM
Q166	DTC144EU	TRANSISTOR	ROHM
Q167	2SA1576(QRS)	TRANSISTOR	ROHM
Q168	2SC4081(QRS)	TRANSISTOR	ROHM
Q169	2SC4081(QRS)	TRANSISTOR	ROHM
Q170	2SC4081(QRS)	TRANSISTOR	ROHM
Q171	2SC4081(QRS)	TRANSISTOR	ROHM
Q172	2SA1576(QRS)	TRANSISTOR	ROHM
Q173	2SA1576(QRS)	TRANSISTOR	ROHM
Q174	2SA1576(QRS)	TRANSISTOR	ROHM
Q175	2SA1576(QRS)	TRANSISTOR	ROHM
Q176	DTC144EU	TRANSISTOR	ROHM
Q177	2SA1576(QRS)	TRANSISTOR	ROHM
Q178	2SC4081(QRS)	TRANSISTOR	ROHM
Q179	2SK621	F.E.T.	MATSUSHITA
Q180	2SK621	F.E.T.	MATSUSHITA

Symbol No.	Part No.	Part Name	Description
Q181	2SK621	F.E.T.	MATSUSHITA
Q182	DTC144EU	TRANSISTOR	ROHM
Q183	2SC4081(QRS)	TRANSISTOR	ROHM
Q184	2SC4081(QRS)	TRANSISTOR	ROHM
Q185	2SA1576(QRS)	TRANSISTOR	ROHM
Q186	2SC4081(QRS)	TRANSISTOR	ROHM
D2	DAN202U	DIODE	ROHM
D3	DAN202U	DIODE	ROHM
D4	1SS99	DIODE	NEC
D5	1SS99	DIODE	NEC
D6	DAN202U	DIODE	ROHM
D7	DAN202U	DIODE	ROHM
D8	DAN202U	DIODE	ROHM
D9	DAN202U	DIODE	ROHM
D11	MA157	DIODE	MATSUSHITA
D12	DAN202U	DIODE	ROHM
D13	DAN202U	DIODE	ROHM
D14	DAN202U	DIODE	ROHM
D15	DAN202U	DIODE	ROHM
D16	DAN202U	DIODE	ROHM
D17	DAN202U	DIODE	ROHM
D18	DAN202U	DIODE	ROHM
D19	1SS99	DIODE	NEC
D20	1SS99	DIODE	NEC
R1	NRSA63J-223	M.G.RESISTOR	22K 1/16W
R2	NRSA63J-681	M.G.RESISTOR	680 1/16W
R3	NRSA63J-223	M.G.RESISTOR	22K 1/16W
R4	NRSA63J-681	M.G.RESISTOR	680 1/16W
R5	NRSA63J-223	M.G.RESISTOR	22K 1/16W
R6	NRSA63J-681	M.G.RESISTOR	680 1/16W
R7	NRSA63J-103	M.G.RESISTOR	10K 1/16W
R8	NRSA63J-103	M.G.RESISTOR	10K 1/16W
R9	NRSA63J-104	M.G.RESISTOR	100K 1/16W
R10	NRSA63J-103	M.G.RESISTOR	10K 1/16W
R11	NRSA63J-563	M.G.RESISTOR	56K 1/16W
R12	NRSA63J-182	M.G.RESISTOR	1.8K 1/16W
R13	NRSA63J-103	M.G.RESISTOR	10K 1/16W
R14	NRSA63J-103	M.G.RESISTOR	10K 1/16W
R15	NRSA63J-103	M.G.RESISTOR	10K 1/16W
R16	NRSA63J-153	M.G.RESISTOR	15K 1/16W
R17	NRSA63J-333	M.G.RESISTOR	33K 1/16W
R18	NRSA63J-153	M.G.RESISTOR	15K 1/16W
R19	NRSA63J-122	M.G.RESISTOR	1.2K 1/16W
R26	NRSA63J-103	M.G.RESISTOR	10K 1/16W
R27	NRSA63J-103	M.G.RESISTOR	10K 1/16W
R28	NRSA63J-103	M.G.RESISTOR	10K 1/16W
R33	NRSA63J-181	M.G.RESISTOR	180 1/16W
R34	NRSA63J-272	M.G.RESISTOR	2.7K 1/16W
R35	NRSA63J-222	M.G.RESISTOR	2.2K 1/16W
R36	NRSA63J-333	M.G.RESISTOR	33K 1/16W
R37	NRSA63J-153	M.G.RESISTOR	15K 1/16W
R38	NRSA63J-122	M.G.RESISTOR	1.2K 1/16W
R45	NRSA63J-333	M.G.RESISTOR	33K 1/16W
R46	NRSA63J-153	M.G.RESISTOR	15K 1/16W
R47	NRSA63J-222	M.G.RESISTOR	2.2K 1/16W
R48	NRSA63J-153	M.G.RESISTOR	15K 1/16W
R49	NRSA63J-333	M.G.RESISTOR	33K 1/16W

Symbol No.	Part No.	Part Name	Description
R51	NRSA63J-333	M.G.RESISTOR	33K 1/16W
R52	NRSA63J-273	M.G.RESISTOR	27K 1/16W(U)
	NRSA63J-183	M.G.RESISTOR	18K 1/16W(E)
R53	NRSA63J-331	M.G.RESISTOR	330 1/16W
R54	NRSA63J-561	M.G.RESISTOR	560 1/16W
R55	NRSA63J-102	M.G.RESISTOR	1.0K 1/16W
R56	NRSA63J-271	M.G.RESISTOR	270 1/16W
R57	NRSA63J-681	M.G.RESISTOR	680 1/16W
R58	NRSA63J-471	M.G.RESISTOR	470 1/16W
R59	NRSA63J-560	M.G.RESISTOR	56 1/16W
R60	NRSA63J-182	M.G.RESISTOR	1.8K 1/16W
R61	NRSA63J-223	M.G.RESISTOR	22K 1/16W
R62	NRSA63J-472	M.G.RESISTOR	4.7K 1/16W
R63	NRSA63J-225	M.G.RESISTOR	2.2M 1/16W
R64	NRSA63J-331	M.G.RESISTOR	330 1/16W
R65	NRSA63J-103	M.G.RESISTOR	10K 1/16W
R66	NRSA63J-333	M.G.RESISTOR	33K 1/16W
R67	NRSA63J-272	M.G.RESISTOR	2.7K 1/16W
R68	NRSA63J-222	M.G.RESISTOR	2.2K 1/16W
R69	NRSA63J-181	M.G.RESISTOR	180 1/16W
R71	NRSA63J-0R0	M.G.RESISTOR	0 1/16W
R73	NRSA63J-0R0	M.G.RESISTOR	0 1/16W
R74	NRSA63J-102	M.G.RESISTOR	1.0K 1/16W
R75	NRSA63J-473	M.G.RESISTOR	47K 1/16W
R76	NRSA63J-183	M.G.RESISTOR	18K 1/16W
R77	NRSA63J-102	M.G.RESISTOR	1.0K 1/16W
R78	NRSA63J-821	M.G.RESISTOR	820 1/16W
R79	NRSA63J-102	M.G.RESISTOR	1.0K 1/16W
R80	NRSA63J-102	M.G.RESISTOR	1.0K 1/16W
R81	NRSA63J-272	M.G.RESISTOR	2.7K 1/16W
R82	NRSA63J-471	M.G.RESISTOR	470 1/16W
R84	NRSA63J-102	M.G.RESISTOR	1.0K 1/16W
R85	NRSA63J-393	M.G.RESISTOR	39K 1/16W
R86	NRSA63J-393	M.G.RESISTOR	39K 1/16W
R87	NRSA63J-562	M.G.RESISTOR	5.6K 1/16W
R88	NRSA63J-152	M.G.RESISTOR	1.5K 1/16W
R89	NRSA63J-392	M.G.RESISTOR	3.9K 1/16W
R90	NRSA63J-102	M.G.RESISTOR	1.0K 1/16W
R91	NRSA63J-331	M.G.RESISTOR	330 1/16W
R92	NRSA63J-471	M.G.RESISTOR	470 1/16W
R93	NRSA63J-393	M.G.RESISTOR	39K 1/16W
R94	NRSA63J-393	M.G.RESISTOR	39K 1/16W
R95	NRSA63J-222	M.G.RESISTOR	2.2K 1/16W
R96	NRSA63J-181	M.G.RESISTOR	180 1/16W
R97	NRSA63J-153	M.G.RESISTOR	15K 1/16W
R98	NRSA63J-392	M.G.RESISTOR	3.9K 1/16W
R99	NRSA63J-102	M.G.RESISTOR	1.0K 1/16W
R100	NRSA63J-392	M.G.RESISTOR	3.9K 1/16W
R101	NRSA63J-391	M.G.RESISTOR	390 1/16W
R102	NRSA63J-102	M.G.RESISTOR	1.0K 1/16W
R103	NRSA63J-0R0	M.G.RESISTOR	0 1/16W(U)
	NRSA63J-151	M.G.RESISTOR	150 1/16W(E)
R104	NRSA63J-101	M.G.RESISTOR	100 1/16W
R105	NRSA63J-391	M.G.RESISTOR	390 1/16W
R106	NRSA63J-102	M.G.RESISTOR	1.0K 1/16W
R107	NRSA63J-182	M.G.RESISTOR	1.8K 1/16W
R108	NRSA63J-222	M.G.RESISTOR	2.2K 1/16W
R109	NRSA63J-331	M.G.RESISTOR	330 1/16W(E)
R110	NRSA63J-0R0	M.G.RESISTOR	0 1/16W(U)
	NRSA63J-821	M.G.RESISTOR	820 1/16W(E)

[VIDEO]

Symbol No.	Part No.	Part Name	Description	
R111	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W
R112	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W
R113	NRSA63J-223	M.G.RESISTOR	22K	1/16W
R114	NRSA63J-223	M.G.RESISTOR	22K	1/16W
R115	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W
R116	NRSA63J-273	M.G.RESISTOR	27K	1/16W
R117	NRSA63J-103	M.G.RESISTOR	10K	1/16W
R118	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W
R119	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W
R120	NRSA63J-471	M.G.RESISTOR	470	1/16W(E)
R121	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W
R122	NRSA63J-103	M.G.RESISTOR	10K	1/16W
R123	NRSA63J-823	M.G.RESISTOR	82K	1/16W
R124	NRSA63J-332	M.G.RESISTOR	3.3K	1/16W
R125	NRSA63J-101	M.G.RESISTOR	100	1/16W(U)
	NRSA63J-681	M.G.RESISTOR	680	1/16W(E)
R126	NRSA63J-332	M.G.RESISTOR	3.3K	1/16W
R127	NRSA63J-0R0	M.G.RESISTOR	0	1/16W
R128	NRSA63J-223	M.G.RESISTOR	22K	1/16W
R129	NRSA63J-223	M.G.RESISTOR	22K	1/16W
R130	NRSA63J-681	M.G.RESISTOR	680	1/16W
R131	NRSA63J-223	M.G.RESISTOR	22K	1/16W
R132	NRSA63J-103	M.G.RESISTOR	10K	1/16W
R133	NRSA63J-681	M.G.RESISTOR	680	1/16W
R134	NRSA63J-821	M.G.RESISTOR	820	1/16W
R135	NRSA63J-331	M.G.RESISTOR	330	1/16W(U)
	NRSA63J-681	M.G.RESISTOR	680	1/16W(E)
R136	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W
R137	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W
R138	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W
R139	NRSA63J-222	M.G.RESISTOR	2.2K	1/16W
R140	NRSA63J-122	M.G.RESISTOR	1.2K	1/16W(U)
	NRSA63J-182	M.G.RESISTOR	1.8K	1/16W(E)
R141	NRSA63J-331	M.G.RESISTOR	330	1/16W
R142	NRSA63J-182	M.G.RESISTOR	1.8K	1/16W
R143	NRSA63J-223	M.G.RESISTOR	22K	1/16W
R144	NRSA63J-223	M.G.RESISTOR	22K	1/16W
R145	NRSA63J-223	M.G.RESISTOR	22K	1/16W
R146	NRSA63J-681	M.G.RESISTOR	680	1/16W
R147	NRSA63J-223	M.G.RESISTOR	22K	1/16W
R148	NRSA63J-273	M.G.RESISTOR	27K	1/16W
R149	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W
R150	NRSA63J-222	M.G.RESISTOR	2.2K	1/16W
R151	NRSA63J-681	M.G.RESISTOR	680	1/16W
R152	NRSA63J-273	M.G.RESISTOR	27K	1/16W
R153	NRSA63J-153	M.G.RESISTOR	15K	1/16W
R154	NRSA63J-222	M.G.RESISTOR	2.2K	1/16W
R155	NRSA63J-122	M.G.RESISTOR	1.2K	1/16W(U)
	NRSA63J-182	M.G.RESISTOR	1.8K	1/16W(E)
R156	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W(U)
R157	NRSA63J-0R0	M.G.RESISTOR	0	1/16W
R158	NRSA63J-182	M.G.RESISTOR	1.8K	1/16W
R159	NRSA63J-223	M.G.RESISTOR	22K	1/16W
R160	NRSA63J-223	M.G.RESISTOR	22K	1/16W
R161	NRSA63J-182	M.G.RESISTOR	1.8K	1/16W
R162	NRSA63J-103	M.G.RESISTOR	10K	1/16W
R163	NRSA63J-103	M.G.RESISTOR	10K	1/16W
R164	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W
R165	NRSA63J-223	M.G.RESISTOR	22K	1/16W
R166	NRSA63J-563	M.G.RESISTOR	56K	1/16W

Symbol No.	Part No.	Part Name	Description	
R167	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W
R168	NRSA63J-561	M.G.RESISTOR	560	1/16W
R169	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W
R170	NRSA63J-333	M.G.RESISTOR	33K	1/16W
R171	NRSA63J-683	M.G.RESISTOR	68K	1/16W
R172	NRSA63J-0R0	M.G.RESISTOR	0	1/16W
R173	NRSA63J-181	M.G.RESISTOR	180	1/16W
R174	NRSA63J-105	M.G.RESISTOR	1.0M	1/16W
R175	NRSA63J-121	M.G.RESISTOR	120	1/16W
R176	NRSA63J-823	M.G.RESISTOR	82K	1/16W
R177	NRSA63J-101	M.G.RESISTOR	100	1/16W
R178	NRSA63J-272	M.G.RESISTOR	2.7K	1/16W
R179	NRSA63J-331	M.G.RESISTOR	330	1/16W
R180	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W
R181	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W
R182	NRSA63J-681	M.G.RESISTOR	680	1/16W
R183	NRSA63J-561	M.G.RESISTOR	560	1/16W
R184	NRSA63J-182	M.G.RESISTOR	1.8K	1/16W
R185	NRSA63J-223	M.G.RESISTOR	22K	1/16W
R186	NRSA63J-563	M.G.RESISTOR	56K	1/16W
R187	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W
R188	NRSA63J-822	M.G.RESISTOR	8.2K	1/16W
R189	NRSA63J-0R0	M.G.RESISTOR	0	1/16W
R190	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W
R191	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W
R192	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W
R193	NRSA63J-471	M.G.RESISTOR	470	1/16W(U)
	NRSA63J-681	M.G.RESISTOR	680	1/16W(E)
R194	NRSA63J-222	M.G.RESISTOR	2.2K	1/16W
R195	NRSA63J-271	M.G.RESISTOR	270	1/16W
R196	NRSA63J-121	M.G.RESISTOR	120	1/16W
R197	NRSA63J-0R0	M.G.RESISTOR	0	1/16W
R198	NRSA63J-391	M.G.RESISTOR	390	1/16W
R199	NRSA63J-222	M.G.RESISTOR	2.2K	1/16W
R200	NRSA63J-182	M.G.RESISTOR	1.8K	1/16W
R201	NRSA63J-561	M.G.RESISTOR	560	1/16W
R202	NRSA63J-561	M.G.RESISTOR	560	1/16W
R203	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W
R204	NRSA63J-222	M.G.RESISTOR	2.2K	1/16W
R205	NRVA63D-122	M.F.RESISTOR	1.2K	1/16W
R206	NRVA63D-391	M.F.RESISTOR	390	1/16W
R207	NRVA63D-152	M.F.RESISTOR	1.5K	1/16W
R208	NRVA63D-151	M.F.RESISTOR	150	1/16W
R209	NRVA63D-332	M.F.RESISTOR	3.3K	1/16W
R210	NRVA63D-332	M.F.RESISTOR	3.3K	1/16W
R211	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W
R212	NRVA63D-223	M.F.RESISTOR	22K	1/16W
R213	NRVA63D-332	M.F.RESISTOR	3.3K	1/16W
R214	NRVA63D-332	M.F.RESISTOR	3.3K	1/16W
R215	NRVA63D-152	M.F.RESISTOR	1.5K	1/16W
R216	NRVA63D-471	M.F.RESISTOR	470	1/16W
R217	NRVA63D-102	M.F.RESISTOR	1.0K	1/16W
R218	NRVA63D-102	M.F.RESISTOR	1.0K	1/16W
R219	NRSA63J-473	M.G.RESISTOR	47K	1/16W
R220	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W
R221	NRSA63J-471	M.G.RESISTOR	470	1/16W
R222	NRSA63J-562	M.G.RESISTOR	5.6K	1/16W
R223	NRSA63J-122	M.G.RESISTOR	1.2K	1/16W
R224	NRSA63J-272	M.G.RESISTOR	2.7K	1/16W

Symbol No.	Part No.	Part Name	Description	
R225	NRSA63J-122	M.G.RESISTOR	1.2K	1/16W
R226	NRSA63J-393	M.G.RESISTOR	39K	1/16W
R227	NRSA63J-680	M.G.RESISTOR	68	1/16W
R228	NRSA63J-560	M.G.RESISTOR	56	1/16W
R229	NRSA63J-103	M.G.RESISTOR	10K	1/16W
R230	NRSA63J-103	M.G.RESISTOR	10K	1/16W
R231	NRSA63J-103	M.G.RESISTOR	10K	1/16W(E)
R232	NRSA63J-103	M.G.RESISTOR	10K	1/16W(E)
R233	NRSA63J-123	M.G.RESISTOR	12K	1/16W
R234	NRSA63J-682	M.G.RESISTOR	6.8K	1/16W
R235	NRSA63J-331	M.G.RESISTOR	330	1/16W
R236	NRSA63J-182	M.G.RESISTOR	1.8K	1/16W
R237	NRSA63J-272	M.G.RESISTOR	2.7K	1/16W
R238	NRVA63D-681	M.F.RESISTOR	680	1/16W
R239	NRSA63J-0R0	M.G.RESISTOR	0	1/16W(E)
R241	NRSA63J-223	M.G.RESISTOR	22K	1/16W
R243	NRSA63J-125	M.G.RESISTOR	1.2M	1/16W
R249	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W
R250	NRSA63J-561	M.G.RESISTOR	560	1/16W
R251	NRSA63J-122	M.G.RESISTOR	1.2K	1/16W
R252	NRSA63J-222	M.G.RESISTOR	2.2K	1/16W
R253	NRSA63J-103	M.G.RESISTOR	10K	1/16W
R254	NRSA63J-0R0	M.G.RESISTOR	0	1/16W
R255	NRSA63J-472	M.G.RESISTOR	4.7K	1/16W
R256	NRSA63J-272	M.G.RESISTOR	2.7K	1/16W
R257	NRSA63J-562	M.G.RESISTOR	5.6K	1/16W
R258	NRSA63J-392	M.G.RESISTOR	3.9K	1/16W
R259	NRSA63J-101	M.G.RESISTOR	100	1/16W(U)
	NRSA63J-821	M.G.RESISTOR	820	1/16W(E)
R260	NRSA63J-471	M.G.RESISTOR	470	1/16W
R261	NRSA63J-471	M.G.RESISTOR	470	1/16W
R262	NRSA63J-181	M.G.RESISTOR	180	1/16W
R263	NRSA63J-821	M.G.RESISTOR	820	1/16W
R264	NRSA63J-151	M.G.RESISTOR	150	1/16W
R265	NRSA63J-183	M.G.RESISTOR	18K	1/16W(U)
	NRSA63J-123	M.G.RESISTOR	12K	1/16W(E)
R266	NRSA63J-473	M.G.RESISTOR	47K	1/16W
R267	NRSA63J-473	M.G.RESISTOR	47K	1/16W
R268	NRSA63J-103	M.G.RESISTOR	10K	1/16W
R269	NRSA63J-222	M.G.RESISTOR	2.2K	1/16W
R270	NRSA63J-822	M.G.RESISTOR	8.2K	1/16W
R271	NRSA63J-682	M.G.RESISTOR	6.8K	1/16W
R272	NRSA63J-822	M.G.RESISTOR	8.2K	1/16W
R273	NRSA63J-223	M.G.RESISTOR	22K	1/16W
R274	NRSA63J-103	M.G.RESISTOR	10K	1/16W
R275	NRSA63J-821	M.G.RESISTOR	820	1/16W
R276	NRSA63J-562	M.G.RESISTOR	5.6K	1/16W
R277	NRSA63J-225	M.G.RESISTOR	2.2M	1/16W
R278	NRSA63J-103	M.G.RESISTOR	10K	1/16W
R279	NRSA63J-152	M.G.RESISTOR	1.5K	1/16W
R280	NRSA63J-103	M.G.RESISTOR	10K	1/16W
R282	NRSA63J-0R0	M.G.RESISTOR	0	1/16W
R283	NRSA63J-103	M.G.RESISTOR	10K	1/16W
R284	NRSA63J-332	M.G.RESISTOR	3.3K	1/16W
R286	NRVA63D-562	M.F.RESISTOR	5.6K	1/16W
R287	NRVA63D-392	M.F.RESISTOR	3.9K	1/16W
R288	NRVA63D-561	M.F.RESISTOR	560	1/16W
R289	NRVA63D-561	M.F.RESISTOR	560	1/16W
R290	NRSA63J-331	M.G.RESISTOR	330	1/16W

Symbol No.	Part No.	Part Name	Description	
R291	NRSA63J-221	M.G.RESISTOR	220	1/16W
R292	NRSA63J-223	M.G.RESISTOR	22K	1/16W
R293	NRSA63J-223	M.G.RESISTOR	22K	1/16W
R294	NRSA63J-273	M.G.RESISTOR	27K	1/16W
R295	NRSA63J-103	M.G.RESISTOR	10K	1/16W
R296	NRSA63J-122	M.G.RESISTOR	1.2K	1/16W
R297	NRSA63J-153	M.G.RESISTOR	15K	1/16W
R298	NRSA63J-223	M.G.RESISTOR	22K	1/16W
R299	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W
R300	NRSA63J-0R0	M.G.RESISTOR	0	1/16W(U)
	NRSA63J-222	M.G.RESISTOR	2.2K	1/16W(E)
R301	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W
R302	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W
R303	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W
R304	NRSA63J-820	M.G.RESISTOR	82	1/16W
R305	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W
R306	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W
R307	NRSA63J-332	M.G.RESISTOR	3.3K	1/16W
R308	NRSA63J-561	M.G.RESISTOR	560	1/16W(U)
	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W(E)
R309	NRSA63J-821	M.G.RESISTOR	820	1/16W
R310	NRSA63J-821	M.G.RESISTOR	820	1/16W
R311	NRSA63J-103	M.G.RESISTOR	10K	1/16W
R312	NRSA63J-223	M.G.RESISTOR	22K	1/16W
R313	NRSA63J-122	M.G.RESISTOR	1.2K	1/16W
R314	NRSA63J-561	M.G.RESISTOR	560	1/16W
R315	NRSA63J-101	M.G.RESISTOR	100	1/16W
R316	NRSA63J-182	M.G.RESISTOR	1.8K	1/16W
R317	NRSA63J-222	M.G.RESISTOR	2.2K	1/16W
R318	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W
R320	NRSA63J-333	M.G.RESISTOR	33K	1/16W
R321	NRSA63J-153	M.G.RESISTOR	15K	1/16W
R322	NRSA63J-223	M.G.RESISTOR	22K	1/16W
R323	NRSA63J-103	M.G.RESISTOR	10K	1/16W
R324	NRSA63J-103	M.G.RESISTOR	10K	1/16W
R325	NRSA63J-473	M.G.RESISTOR	47K	1/16W
R326	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W
R327	NRSA63J-333	M.G.RESISTOR	33K	1/16W
R328	NRSA63J-223	M.G.RESISTOR	22K	1/16W
R329	NRSA63J-182	M.G.RESISTOR	1.8K	1/16W
R330	NRSA63J-471	M.G.RESISTOR	470	1/16W(U)
	NRSA63J-221	M.G.RESISTOR	220	1/16W(E)
R331	NRSA63J-391	M.G.RESISTOR	390	1/16W
R332	NRSA63J-391	M.G.RESISTOR	390	1/16W(U)
	NRSA63J-181	M.G.RESISTOR	180	1/16W(E)
R333	NRSA63J-391	M.G.RESISTOR	390	1/16W
R334	NRSA63J-222	M.G.RESISTOR	2.2K	1/16W
R335	NRSA63J-222	M.G.RESISTOR	2.2K	1/16W
R336	NRSA63J-101	M.G.RESISTOR	100	1/16W(U)
	NRSA63J-0R0	M.G.RESISTOR	0	1/16W(E)
R337	NRSA63J-561	M.G.RESISTOR	560	1/16W
R338	NRSA63J-561	M.G.RESISTOR	560	1/16W
R339	NRSA63J-331	M.G.RESISTOR	330	1/16W(U)
	NRSA63J-681	M.G.RESISTOR	680	1/16W(E)
R340	NRSA63J-561	M.G.RESISTOR	560	1/16W
R341	NRSA63J-561	M.G.RESISTOR	560	1/16W
R342	NRSA63J-153	M.G.RESISTOR	15K	1/16W
R343	NRSA63J-103	M.G.RESISTOR	10K	1/16W
R344	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W
R345	NRSA63J-222	M.G.RESISTOR	2.2K	1/16W(U)

[VIDEO]

Symbol No.	Part No.	Part Name	Description	
	NRSA63J-0R0	M.G.RESISTOR	0	1/16W(E)
R346	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W
R347	NRSA63J-221	M.G.RESISTOR	220	1/16W
R348	NRSA63J-221	M.G.RESISTOR	220	1/16W
R349	NRSA63J-221	M.G.RESISTOR	220	1/16W
R350	NRSA63J-221	M.G.RESISTOR	220	1/16W
R351	NRSA63J-103	M.G.RESISTOR	10K	1/16W
R352	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W
R353	NRSA63J-752	M.G.RESISTOR	7.5K	1/16W
R354	NRSA63J-392	M.G.RESISTOR	3.9K	1/16W
R355	NRSA63J-223	M.G.RESISTOR	22K	1/16W
R356	NRSA63J-223	M.G.RESISTOR	22K	1/16W
R357	NRSA63J-331	M.G.RESISTOR	330	1/16W
R358	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W
R360	NRSA63J-0R0	M.G.RESISTOR	0	1/16W
R362	NRSA63J-0R0	M.G.RESISTOR	0	1/16W
R363	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W
R364	NRSA63J-153	M.G.RESISTOR	15K	1/16W
R365	NRSA63J-103	M.G.RESISTOR	10K	1/16W
R376	NRSA63J-0R0	M.G.RESISTOR	0	1/16W
R377	NRSA63J-0R0	M.G.RESISTOR	0	1/16W(E)
R378	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W(U)
R380	NRSA63J-152	M.G.RESISTOR	1.5K	1/16W
R381	NRSA63J-273	M.G.RESISTOR	27K	1/16W
R382	NRSA63J-103	M.G.RESISTOR	10K	1/16W
R383	NRSA63J-561	M.G.RESISTOR	560	1/16W
R384	NRSA63J-0R0	M.G.RESISTOR	0	1/16W
R385	NRSA63J-153	M.G.RESISTOR	15K	1/16W
R386	NRSA63J-223	M.G.RESISTOR	22K	1/16W
R387	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W(U)
	NRSA63J-561	M.G.RESISTOR	560	1/16W(E)
R388	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W
R389	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W
R390	NRSA63J-561	M.G.RESISTOR	560	1/16W
R391	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W
R392	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W
R393	NRSA63J-223	M.G.RESISTOR	22K	1/16W
R394	NRSA63J-223	M.G.RESISTOR	22K	1/16W
R395	NRSA63J-222	M.G.RESISTOR	2.2K	1/16W
R396	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W
R397	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W
R398	NRSA63J-271	M.G.RESISTOR	270	1/16W
R399	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W
R400	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W
R401	NRSA63J-223	M.G.RESISTOR	22K	1/16W
R402	NRSA63J-223	M.G.RESISTOR	22K	1/16W
R403	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W
R404	NRSA63J-331	M.G.RESISTOR	330	1/16W
R405	NRSA63J-0R0	M.G.RESISTOR	0	1/16W(U)
	NRSA63J-332	M.G.RESISTOR	3.3K	1/16W(E)
R406	NRSA63J-681	M.G.RESISTOR	680	1/16W
R407	NRSA63J-272	M.G.RESISTOR	2.7K	1/16W
R408	NRSA63J-103	M.G.RESISTOR	10K	1/16W
R409	NRSA63J-333	M.G.RESISTOR	33K	1/16W
R410	NRSA63J-101	M.G.RESISTOR	100	1/16W
R411	NRSA63J-103	M.G.RESISTOR	10K	1/16W
R412	NRSA63J-103	M.G.RESISTOR	10K	1/16W
R413	NRSA63J-103	M.G.RESISTOR	10K	1/16W
R414	NRSA63J-103	M.G.RESISTOR	10K	1/16W

Symbol No.	Part No.	Part Name	Description	
R415	NRSA63J-152	M.G.RESISTOR	1.5K	1/16W
R416	NRSA63J-222	M.G.RESISTOR	2.2K	1/16W
R417	NRSA63J-122	M.G.RESISTOR	1.2K	1/16W
R418	NRSA63J-471	M.G.RESISTOR	470	1/16W(E)
R419	NRSA63J-223	M.G.RESISTOR	22K	1/16W
R420	NRSA63J-223	M.G.RESISTOR	22K	1/16W
R421	NRSA63J-152	M.G.RESISTOR	1.5K	1/16W
R422	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W
R423	NRSA63J-562	M.G.RESISTOR	5.6K	1/16W
R424	NRSA63J-182	M.G.RESISTOR	1.8K	1/16W
R425	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W
R426	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W
R427	NRSA63J-122	M.G.RESISTOR	1.2K	1/16W
R428	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W
R429	NRSA63J-331	M.G.RESISTOR	330	1/16W
R430	NRSA63J-681	M.G.RESISTOR	680	1/16W
R431	NRSA63J-821	M.G.RESISTOR	820	1/16W
R432	NRSA63J-103	M.G.RESISTOR	10K	1/16W
R433	NRSA63J-222	M.G.RESISTOR	2.2K	1/16W
R434	NRSA63J-121	M.G.RESISTOR	120	1/16W
R435	NRSA63J-120	M.G.RESISTOR	12	1/16W(U)
	NRSA63J-390	M.G.RESISTOR	39	1/16W(E)
R436	NRSA63J-103	M.G.RESISTOR	10K	1/16W
R437	NRSA63J-682	M.G.RESISTOR	6.8K	1/16W
R438	NRSA63J-223	M.G.RESISTOR	22K	1/16W
R439	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W
R440	NRSA63J-103	M.G.RESISTOR	10K	1/16W
R441	NRSA63J-103	M.G.RESISTOR	10K	1/16W
R442	NRSA63J-103	M.G.RESISTOR	10K	1/16W(E)
R443	NRSA63J-103	M.G.RESISTOR	10K	1/16W
R444	NRSA63J-222	M.G.RESISTOR	2.2K	1/16W(U)
	NRSA63J-562	M.G.RESISTOR	5.6K	1/16W(E)
R445	NRSA63J-182	M.G.RESISTOR	1.8K	1/16W
R446	NRSA63J-563	M.G.RESISTOR	56K	1/16W
R447	NRSA63J-103	M.G.RESISTOR	10K	1/16W
R448	NRSA63J-332	M.G.RESISTOR	3.3K	1/16W
R449	NRSA63J-103	M.G.RESISTOR	10K	1/16W
R450	NRSA63J-103	M.G.RESISTOR	10K	1/16W(U)
	NRSA63J-472	M.G.RESISTOR	4.7K	1/16W(E)
R451	NRSA63J-822	M.G.RESISTOR	8.2K	1/16W
R452	NRSA63J-104	M.G.RESISTOR	100K	1/16W
R453	NRSA63J-223	M.G.RESISTOR	22K	1/16W
R454	NRSA63J-223	M.G.RESISTOR	22K	1/16W
R455	NRSA63J-222	M.G.RESISTOR	2.2K	1/16W
R456	NRSA63J-222	M.G.RESISTOR	2.2K	1/16W
R457	NRSA63J-182	M.G.RESISTOR	1.8K	1/16W
R458	NRSA63J-563	M.G.RESISTOR	56K	1/16W
R459	NRSA63J-103	M.G.RESISTOR	10K	1/16W
R460	NRSA63J-103	M.G.RESISTOR	10K	1/16W
R461	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W
R462	NRSA63J-222	M.G.RESISTOR	2.2K	1/16W
R463	NRSA63J-272	M.G.RESISTOR	2.7K	1/16W
R464	NRSA63J-272	M.G.RESISTOR	2.7K	1/16W
R465	NRSA63J-272	M.G.RESISTOR	2.7K	1/16W
R466	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W
R467	NRSA63J-222	M.G.RESISTOR	2.2K	1/16W
R468	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W
R469	NRSA63J-223	M.G.RESISTOR	22K	1/16W
R470	NRSA63J-223	M.G.RESISTOR	22K	1/16W
R471	NRSA63J-153	M.G.RESISTOR	15K	1/16W

Symbol No.	Part No.	Part Name	Description
R472	NRSA63J-333	M.G.RESISTOR	33K 1/16W
R473	NRSA63J-222	M.G.RESISTOR	2.2K 1/16W
R474	NRSA63J-153	M.G.RESISTOR	15K 1/16W
R476	NRSA63J-0R0	M.G.RESISTOR	0 1/16W(E)
R477	NRSA63J-271	M.G.RESISTOR	270 1/16W(U)
R478	NRSA63J-0R0	M.G.RESISTOR	0 1/16W(E)
R479	NRSA63J-0R0	M.G.RESISTOR	0 1/16W(U)
R480	NRSA63J-0R0	M.G.RESISTOR	0 1/16W(U)
R481	NRSA63J-0R0	M.G.RESISTOR	0 1/16W
R482	NRSA63J-0R0	M.G.RESISTOR	0 1/16W
R483	NRSA63J-333	M.G.RESISTOR	33K 1/16W
R484	NRSA63J-153	M.G.RESISTOR	15K 1/16W
R485	NRSA63J-222	M.G.RESISTOR	2.2K 1/16W
R486	NRSA63J-333	M.G.RESISTOR	33K 1/16W
R487	NRSA63J-152	M.G.RESISTOR	1.5K 1/16W
R488	NRSA63J-222	M.G.RESISTOR	2.2K 1/16W
R489	NRSA63J-121	M.G.RESISTOR	120 1/16W(U)
	NRSA63J-151	M.G.RESISTOR	150 1/16W(E)
R490	NRSA63J-471	M.G.RESISTOR	470 1/16W
R491	NRSA63J-0R0	M.G.RESISTOR	0 1/16W(U)
R492	NRSA63J-471	M.G.RESISTOR	470 1/16W
R493	NRSA63J-153	M.G.RESISTOR	15K 1/16W
R494	NRSA63J-153	M.G.RESISTOR	15K 1/16W
R495	NRSA63J-223	M.G.RESISTOR	22K 1/16W
R496	NRSA63J-223	M.G.RESISTOR	22K 1/16W
R497	NRSA63J-222	M.G.RESISTOR	2.2K 1/16W
R498	NRSA63J-222	M.G.RESISTOR	2.2K 1/16W
R499	NRSA63J-272	M.G.RESISTOR	2.7K 1/16W
R500	NRSA63J-102	M.G.RESISTOR	1.0K 1/16W
R501	NRSA63J-272	M.G.RESISTOR	2.7K 1/16W
R502	NRSA63J-272	M.G.RESISTOR	2.7K 1/16W
R503	NRSA63J-272	M.G.RESISTOR	2.7K 1/16W
R505	NRSA63J-682	M.G.RESISTOR	6.8K 1/16W
R506	NRSA63J-473	M.G.RESISTOR	47K 1/16W
R507	NRSA63J-103	M.G.RESISTOR	10K 1/16W
R508	NRSA63J-332	M.G.RESISTOR	3.3K 1/16W
R509	NRSA63J-102	M.G.RESISTOR	1.0K 1/16W
R510	NRSA63J-102	M.G.RESISTOR	1.0K 1/16W
R511	NRSA63J-153	M.G.RESISTOR	15K 1/16W
R512	NRSA63J-153	M.G.RESISTOR	15K 1/16W
R513	NRSA63J-561	M.G.RESISTOR	560 1/16W
R514	NRSA63J-331	M.G.RESISTOR	330 1/16W(U)
	NRSA63J-391	M.G.RESISTOR	390 1/16W(E)
R515	NRSA63J-222	M.G.RESISTOR	2.2K 1/16W
R517	NRVA63D-750	M.F.RESISTOR	75 1/16W
R518	NRVA63D-750	M.F.RESISTOR	75 1/16W
VR1	NVP1415-503	TRIM.RESISTOR	S.DET
VR4	NVP1415-103	TRIM.RESISTOR	SYNC LEVEL
VR5	NVP1415-502	TRIM.RESISTOR	S REC FM LEVEL
VR6	NVP1415-502	TRIM.RESISTOR	N REC FM LEVEL
VR7	NVP1415-202	TRIM.RESISTOR	N EQ
VR8	NVP1415-202	TRIM.RESISTOR	S EQ1
VR9	NVP1415-202	TRIM.RESISTOR	S EQ2
VR10	NVP1415-202	TRIM.RESISTOR	CCD LEVEL
VR11	NVP1415-501	TRIM.RESISTOR	REC PROCESS IN(U)
	NVP1415-502	TRIM.RESISTOR	REC PROCESS IN (E)
VR12	NVP1415-502	TRIM.RESISTOR	REC PROCESS OUT

Symbol No.	Part No.	Part Name	Description
VR13	NVP1415-502	TRIM.RESISTOR	N CARR.
VR14	NVP1415-502	TRIM.RESISTOR	N DEV.
VR15	NVP1415-502	TRIM.RESISTOR	S CARR.
VR16	NVP1415-502	TRIM.RESISTOR	S DEV.
VR17	NVP1415-202	TRIM.RESISTOR	S W.CLIP
VR18	NVP1415-202	TRIM.RESISTOR	N W.CLIP
VR19	NVP1415-202	TRIM.RESISTOR	S D.CLIP
VR20	NVP1415-202	TRIM.RESISTOR	N D.CLIP
VR21	NVP1415-103	TRIM.RESISTOR	AGC LEVEL
VR22	NVP1415-502	TRIM.RESISTOR	S PB Y LEVEL
VR23	NVP1415-502	TRIM.RESISTOR	N PB Y LEVEL
VR24	NVP1415-102	TRIM.RESISTOR	N REC C LEVEL
VR25	NVP1415-102	TRIM.RESISTOR	S REC C LEVEL
VR26	NVP1415-202	TRIM.RESISTOR	PB C LEVEL
VR30	NVP1415-204	TRIM.RESISTOR	NOT USED
C1	NCS31HJ-100	CER.CAPACITOR	10P 50V
C2	NCS31HJ-100	CER.CAPACITOR	10P 50V
C3	NCB31HK-103	CER.CAPACITOR	0.010 50V
C4	NEH91EM-336	E.CAPACITOR	33 25V
C5	NCB31HK-103	CER.CAPACITOR	0.010 50V
C6	NCB31HK-103	CER.CAPACITOR	0.010 50V
C7	NCB31HK-103	CER.CAPACITOR	0.010 50V
C8	NCB31HK-103	CER.CAPACITOR	0.010 50V
C9	NEH91EM-336	E.CAPACITOR	33 25V
C10	NCB31HK-103	CER.CAPACITOR	0.010 50V
C11	NCB31HK-103	CER.CAPACITOR	0.010 50V
C12	NCS31HJ-7R0	CER.CAPACITOR	7.0P 50V
C13	NEH91EM-475	E.CAPACITOR	4.7 25V
C14	NEH91HM-104	E.CAPACITOR	0.10 50V
C15	NEN11EM-475	NP.CAPACITOR	4.7 25V
C16	NEH91HM-225	E.CAPACITOR	2.2 50V
C17	NEH91CM-476	E.CAPACITOR	47 16V
C19	NEH91EM-475	E.CAPACITOR	4.7 25V
C20	NCB31HK-103	CER.CAPACITOR	0.010 50V(E)
C26	NEN11EM-475	NP.CAPACITOR	4.7 25V
C28	NEN20JM-476	NP.CAPACITOR	47 6.3V
C31	NCB31HK-103	CER.CAPACITOR	0.010 50V
C32	NEH91CM-106	E.CAPACITOR	10 16V
C33	NCB31HK-103	CER.CAPACITOR	0.010 50V
C35	NCB31HK-103	CER.CAPACITOR	0.010 50V
C36	NEH91CM-476	E.CAPACITOR	47 16V
C37	NCB31HK-103	CER.CAPACITOR	0.010 50V(E)
C38	NEH91CM-476	E.CAPACITOR	47 16V
C39	NCB31HK-103	CER.CAPACITOR	0.010 50V
C40	NEH91CM-476	E.CAPACITOR	47 16V
C41	NCS31HJ-150	CER.CAPACITOR	15P 50V
C42	NEH91CM-106	E.CAPACITOR	10 16V
C43	NEH91HM-474	E.CAPACITOR	0.47 50V
C45	NEH91CM-476	E.CAPACITOR	47 16V
C46	NEH91CM-106	E.CAPACITOR	10 16V
C47	NCB31CK-223	CER.CAPACITOR	0.022 16V
C48	NEH91CM-106	E.CAPACITOR	10 16V
C49	NCS31HJ-391	CER.CAPACITOR	390P 50V
C50	NEH91CM-476	E.CAPACITOR	47 16V
C51	NCB31HK-103	CER.CAPACITOR	0.010 50V
C52	NCS31HJ-681	CER.CAPACITOR	680P 50V
C53	NCB31HK-103	CER.CAPACITOR	0.010 50V
C54	NCB31HK-103	CER.CAPACITOR	0.010 50V

[VIDEO]

Symbol No.	Part No.	Part Name	Description	
C55	NCS31HJ-121	CER.CAPACITOR	120P	50V
C56	NCF31CZ-104	CER.CAPACITOR	0.10	16V
C57	NCS31HJ-120	CER.CAPACITOR	12P	50V(E)
C58	NCB31HK-103	CER.CAPACITOR	0.010	50V
C59	NCS31HJ-330	CER.CAPACITOR	33P	50V(E)
C60	NCB31HK-103	CER.CAPACITOR	0.010	50V
C61	NEH91EM-336	E.CAPACITOR	33	25V
C62	NCS31HJ-151	CER.CAPACITOR	150P	50V
C63	NCT08CH-331	CER.CAPACITOR	330P	50V(U)
	NCT08CH-121	CER.CAPACITOR	120P	50V(E)
C66	NCS31HJ-680	CER.CAPACITOR	68P	50V(U)
C67	NCB31HK-103	CER.CAPACITOR	0.010	50V
C68	NCS31HJ-221	CER.CAPACITOR	220P	50V(U)
	NCB31HK-103	CER.CAPACITOR	0.010	50V(E)
C69	NCS31HJ-680	CER.CAPACITOR	68P	50V(E)
C70	NCS31HJ-151	CER.CAPACITOR	150P	50V
C72	NCB31HK-103	CER.CAPACITOR	0.010	50V
C73	NCB31HK-103	CER.CAPACITOR	0.010	50V
C74	NCB31HK-103	CER.CAPACITOR	0.010	50V
C75	NEH91CM-106	E.CAPACITOR	10	16V
C76	NCF31CZ-104	CER.CAPACITOR	0.10	16V
C77	NCB31HK-103	CER.CAPACITOR	0.010	50V
C78	NEH91EM-336	E.CAPACITOR	33	25V
C79	NCS31HJ-271	CER.CAPACITOR	270P	50V(U)
	NCS31HJ-220	CER.CAPACITOR	22P	50V(E)
C80	NCB31HK-103	CER.CAPACITOR	0.010	50V
C81	NCB31HK-103	CER.CAPACITOR	0.010	50V
C82	NCB31HK-103	CER.CAPACITOR	0.010	50V
C84	NCS31HJ-470	CER.CAPACITOR	47P	50V(U)
	NCS31HJ-270	CER.CAPACITOR	27P	50V(E)
C86	NCS31HJ-390	CER.CAPACITOR	39P	50V(U)
C87	NCS31HJ-271	CER.CAPACITOR	270P	50V
C88	NCB31HK-102	CER.CAPACITOR	1000P	50V
C89	NCB31HK-103	CER.CAPACITOR	0.010	50V
C90	NCS31HJ-820	CER.CAPACITOR	82P	50V(U)
	NCS31HJ-470	CER.CAPACITOR	47P	50V(E)
C91	NCB31HK-103	CER.CAPACITOR	0.010	50V
C92	NCB31HK-103	CER.CAPACITOR	0.010	50V
C93	NEH91EM-336	E.CAPACITOR	33	25V
C94	NCB31HK-103	CER.CAPACITOR	0.010	50V
C95	NCB31HK-103	CER.CAPACITOR	0.010	50V
C97	NCS31HJ-220	CER.CAPACITOR	22P	50V
C98	NCB31HK-103	CER.CAPACITOR	0.010	50V
C100	NCB31HK-103	CER.CAPACITOR	0.010	50V
C101	NCB31HK-103	CER.CAPACITOR	0.010	50V(U)
C102	NCS31HJ-271	CER.CAPACITOR	270P	50V(E)
C103	NCS31HJ-120	CER.CAPACITOR	12P	50V(U)
	NCB31CK-223	CER.CAPACITOR	0.022	16V(E)
C105	NCS31HJ-151	CER.CAPACITOR	150P	50V(U)
	NCS31HJ-101	CER.CAPACITOR	100P	50V(E)
C106	NCB31HK-103	CER.CAPACITOR	0.010	50V
C107	NCB31HK-103	CER.CAPACITOR	0.010	50V
C108	NEH91EM-336	E.CAPACITOR	33	25V
C109	NEH91EM-336	E.CAPACITOR	33	25V
C110	NCB31HK-103	CER.CAPACITOR	0.010	50V
C111	NEH91CM-106	E.CAPACITOR	10	16V
C112	NEH91CM-106	E.CAPACITOR	10	16V
C113	NCS31HJ-100	CER.CAPACITOR	10P	50V
C115	NEH91HM-105	E.CAPACITOR	1.0	50V
C116	NEH91EM-475	E.CAPACITOR	4.7	25V

Symbol No.	Part No.	Part Name	Description	
C117	NCB31HK-102	CER.CAPACITOR	1000P	50V
C118	NEH91HM-224	E.CAPACITOR	0.22	50V
C119	NEH91EM-475	E.CAPACITOR	4.7	25V
C120	NCB31HK-102	CER.CAPACITOR	1000P	50V
C121	NCB31HK-102	CER.CAPACITOR	1000P	50V
C122	NEN11HM-224	NP.CAPACITOR	0.22	50V
C123	NEN11HM-224	NP.CAPACITOR	0.22	50V
C124	NCS31HJ-101	CER.CAPACITOR	100P	50V
C125	NEN10JM-106	NP.CAPACITOR	10	6.3V
C126	NCS31HJ-820	CER.CAPACITOR	82P	50V
C127	NEH91CM-476	E.CAPACITOR	47	16V
C128	NCS31HJ-151	CER.CAPACITOR	150P	50V
C129	NCB31HK-103	CER.CAPACITOR	0.010	50V
C130	NEH91EM-336	E.CAPACITOR	33	25V
C132	NCS31HJ-560	CER.CAPACITOR	56P	50V
C133	NEH91CM-476	E.CAPACITOR	47	16V
C135	NCT08CH-101	CER.CAPACITOR	100P	50V
C136	NCT08CH-181	CER.CAPACITOR	180P	50V
C137	NCT08CH-271	CER.CAPACITOR	270P	50V
C138	NCT08CH-271	CER.CAPACITOR	270P	50V
C139	NEH91CM-106	E.CAPACITOR	10	16V
C140	NEH91HM-225	E.CAPACITOR	2.2	50V
C141	NEH91HM-225	E.CAPACITOR	2.2	50V
C142	NEH91CM-476	E.CAPACITOR	47	16V
C143	NEH91CM-106	E.CAPACITOR	10	16V
C144	NCB31HK-103	CER.CAPACITOR	0.010	50V
C145	NEH91EM-336	E.CAPACITOR	33	25V
C146	NCT08CH-301	CER.CAPACITOR	300P	50V
C147	NCT08CH-301	CER.CAPACITOR	300P	50V
C148	NCT08CH-221	CER.CAPACITOR	220P	50V
C149	NCT08CH-820	CER.CAPACITOR	82P	50V
C150	NCT08CH-271	CER.CAPACITOR	270P	50V
C151	NEH90JM-107	E.CAPACITOR	100	6.3V
C152	NCB31HK-103	CER.CAPACITOR	0.010	50V
C153	NCS31HJ-390	CER.CAPACITOR	39P	50V
C154	NCB31HK-103	CER.CAPACITOR	0.010	50V
C155	NCB31HK-103	CER.CAPACITOR	0.010	50V
C156	NCS31HJ-120	CER.CAPACITOR	12P	50V
C157	NCB31HK-103	CER.CAPACITOR	0.010	50V
C158	NEH91HM-224	E.CAPACITOR	0.22	50V
C159	NCT08CH-271	CER.CAPACITOR	270P	50V
C160	NCT08CH-101	CER.CAPACITOR	100P	50V
C161	NCT08CH-390	CER.CAPACITOR	39P	50V(E)
C162	NCB31HK-103	CER.CAPACITOR	0.010	50V
C163	NEN11HM-224	NP.CAPACITOR	0.22	50V
C165	NEN11HM-224	NP.CAPACITOR	0.22	50V
C166	NEH91CM-106	E.CAPACITOR	10	16V
C169	NCB31HK-103	CER.CAPACITOR	0.010	50V
C171	NEH90JM-226	E.CAPACITOR	22	6.3V
C172	NEH91HM-474	E.CAPACITOR	0.47	50V
C173	NEH91HM-105	E.CAPACITOR	1.0	50V
C174	NEH91EM-475	E.CAPACITOR	4.7	25V
C175	NEH91CM-476	E.CAPACITOR	47	16V
C176	NEH90JM-107	E.CAPACITOR	100	6.3V
C177	NCB31HK-103	CER.CAPACITOR	0.010	50V
C178	NEH91EM-475	E.CAPACITOR	4.7	25V
C179	NEH91HM-225	E.CAPACITOR	2.2	50V
C180	NEH91HM-225	E.CAPACITOR	2.2	50V(U)
	QEF80JM-225	TAN.CAPACITOR	2.2	6.3V(E)

Symbol No.	Part No.	Part Name	Description	
C181	NEH91HM-474	E.CAPACITOR	0.47	50V
C182	NCS31HJ-271	CER.CAPACITOR	270P	50V
C183	NCS31HJ-101	CER.CAPACITOR	100P	50V
C184	NCS31HJ-470	CER.CAPACITOR	47P	50V
C185	NCB31HK-103	CER.CAPACITOR	0.010	50V
C186	NCB31HK-103	CER.CAPACITOR	0.010	50V
C187	NCT08CH-820	CER.CAPACITOR	82P	50V
C188	NCT08CH-331	CER.CAPACITOR	330P	50V
C189	NCT08CH-220	CER.CAPACITOR	22P	50V (E)
C190	NCT08CH-680	CER.CAPACITOR	68P	50V (U)
	NCT08CH-151	CER.CAPACITOR	150P	50V (E)
C191	NCT08CH-331	CER.CAPACITOR	330P	50V
C192	NCT08CH-180	CER.CAPACITOR	18P	50V
C193	NCB31HK-103	CER.CAPACITOR	0.010	50V
C194	NCB31HK-103	CER.CAPACITOR	0.010	50V
C195	NCB31HK-103	CER.CAPACITOR	0.010	50V
C196	NCB31HK-103	CER.CAPACITOR	0.010	50V
C197	NCS31HJ-151	CER.CAPACITOR	150P	50V (E)
C198	NCS31HJ-151	CER.CAPACITOR	150P	50V
C199	NCS31HJ-151	CER.CAPACITOR	150P	50V (E)
C200	NCB31HK-103	CER.CAPACITOR	0.010	50V
C202	NEH91EM-336	E.CAPACITOR	33	25V
C203	NCB31HK-103	CER.CAPACITOR	0.010	50V
C204	NCB31HK-103	CER.CAPACITOR	0.010	50V
C205	NCB31HK-103	CER.CAPACITOR	0.010	50V
C206	NCB31HK-103	CER.CAPACITOR	0.010	50V
C207	NCB31HK-103	CER.CAPACITOR	0.010	50V
C208	NCB31HK-103	CER.CAPACITOR	0.010	50V
C209	NCS31HJ-100	CER.CAPACITOR	10P	50V
C210	NCS31HJ-101	CER.CAPACITOR	100P	50V
C211	NCB31HK-103	CER.CAPACITOR	0.010	50V
C212	NCS31HJ-331	CER.CAPACITOR	330P	50V (U)
C213	NCB31HK-103	CER.CAPACITOR	0.010	50V
C214	NEH91CM-106	E.CAPACITOR	10	16V (U)
C215	NCB31HK-103	CER.CAPACITOR	0.010	50V
C216	NCB31HK-103	CER.CAPACITOR	0.010	50V
C217	NCB31HK-103	CER.CAPACITOR	0.010	50V
C218	NCB31HK-103	CER.CAPACITOR	0.010	50V
C219	NCB31HK-103	CER.CAPACITOR	0.010	50V
C220	NCS31HJ-681	CER.CAPACITOR	680P	50V
C221	NCB31HK-103	CER.CAPACITOR	0.010	50V
C222	NCB31CK-223	CER.CAPACITOR	0.022	16V
C223	NCB31HK-103	CER.CAPACITOR	0.010	50V
C224	NEH91EM-336	E.CAPACITOR	33	25V
C225	NCB31HK-103	CER.CAPACITOR	0.010	50V
C226	NEH91EM-475	E.CAPACITOR	4.7	25V
C227	NCB31HK-103	CER.CAPACITOR	0.010	50V
C228	NEH90JM-476	E.CAPACITOR	47	6.3V
C229	NCB31HK-103	CER.CAPACITOR	0.010	50V
C231	NCB31HK-103	CER.CAPACITOR	0.010	50V
C242	NCB31HK-103	CER.CAPACITOR	0.010	50V
C243	NEH90JM-476	E.CAPACITOR	47	6.3V
C244	NCB31HK-103	CER.CAPACITOR	0.010	50V
C245	NEH91EM-336	E.CAPACITOR	33	25V
C246	NCB31HK-103	CER.CAPACITOR	0.010	50V (U)
	NCS31HJ-151	CER.CAPACITOR	150P	50V (E)
C247	NCB31HK-103	CER.CAPACITOR	0.010	50V
C248	NCB31HK-103	CER.CAPACITOR	0.010	50V
C250	NCS31HJ-151	CER.CAPACITOR	150P	50V (U)

Symbol No.	Part No.	Part Name	Description	
C251	NCB31HK-103	CER.CAPACITOR	0.010	50V
C254	NCB31HK-103	CER.CAPACITOR	0.010	50V
C256	NCS31HJ-560	CER.CAPACITOR	56P	50V
C257	NCF31CZ-104	CER.CAPACITOR	0.10	16V (U)
	NCB31HK-103	CER.CAPACITOR	0.010	50V (E)
C258	NCB31HK-102	CER.CAPACITOR	1000P	50V (U)
	NCS31HJ-390	CER.CAPACITOR	39P	50V (E)
C259	NCB31HK-103	CER.CAPACITOR	0.010	50V
C260	NCB31HK-103	CER.CAPACITOR	0.010	50V
C261	NEH91HM-105	E.CAPACITOR	1.0	50V
C262	NCB31HK-103	CER.CAPACITOR	0.010	50V
C263	NCB31HK-103	CER.CAPACITOR	0.010	50V
C264	NCB31HK-103	CER.CAPACITOR	0.010	50V
C265	NCB31HK-103	CER.CAPACITOR	0.010	50V
C266	NCB31HK-103	CER.CAPACITOR	0.010	50V
C267	NEH91HM-224	E.CAPACITOR	0.22	50V
C268	NCB31HK-103	CER.CAPACITOR	0.010	50V
C269	NCB31HK-103	CER.CAPACITOR	0.010	50V
C270	NCS31HJ-270	CER.CAPACITOR	27P	50V
C271	NCS31HJ-5R0	CER.CAPACITOR	5.0P	50V
C272	NCB31HK-103	CER.CAPACITOR	0.010	50V
C273	NCB31HK-103	CER.CAPACITOR	0.010	50V
C274	NCB31HK-103	CER.CAPACITOR	0.010	50V
C275	NCB31HK-103	CER.CAPACITOR	0.010	50V
C276	NEH91CM-106	E.CAPACITOR	10	16V
C277	NEH91CM-106	E.CAPACITOR	10	16V
C278	NCB31HK-103	CER.CAPACITOR	0.010	50V
C279	NCB31HK-103	CER.CAPACITOR	0.010	50V
C280	NCB31HK-103	CER.CAPACITOR	0.010	50V
C281	NEH91CM-106	E.CAPACITOR	10	16V
C282	NEH91CM-106	E.CAPACITOR	10	16V
C283	NEH91EM-475	E.CAPACITOR	4.7	25V
C284	NEH91EM-475	E.CAPACITOR	4.7	25V
C285	NEH91EM-475	E.CAPACITOR	4.7	25V
C286	NCS31HJ-680	CER.CAPACITOR	68P	50V
C287	NCB31CK-223	CER.CAPACITOR	0.022	16V
C288	NCB31CK-223	CER.CAPACITOR	0.022	16V
C289	NCS31HJ-330	CER.CAPACITOR	33P	50V
C290	NEH91CM-106	E.CAPACITOR	10	16V
C291	NCB31HK-103	CER.CAPACITOR	0.010	50V
C292	NCS31HJ-471	CER.CAPACITOR	470P	50V
C293	NEH91HM-225	E.CAPACITOR	2.2	50V
C294	NCR21CK-563	CER.CAPACITOR	0.056	16V (E)
C295	NEH91HM-225	E.CAPACITOR	2.2	50V (U)
	NEH91HM-474	E.CAPACITOR	0.47	50V (E)
C296	NCB31EK-153	CER.CAPACITOR	0.015	25V
C298	NEH91HM-225	E.CAPACITOR	2.2	50V
C299	NCB31HK-103	CER.CAPACITOR	0.010	50V
C300	NCS31HJ-181	CER.CAPACITOR	180P	50V (U)
	NCS31HJ-151	CER.CAPACITOR	150P	50V (E)
C301	NCB31HK-103	CER.CAPACITOR	0.010	50V
C302	NCS31HJ-390	CER.CAPACITOR	39P	50V (E)
C303	NCB31HK-102	CER.CAPACITOR	1000P	50V
C304	NCS31HJ-5R0	CER.CAPACITOR	5.0P	50V
C305	NEH91HM-104	E.CAPACITOR	0.10	50V
C306	NCS31HJ-101	CER.CAPACITOR	100P	50V
C307	NCF31CZ-104	CER.CAPACITOR	0.10	16V
C308	NCS31HJ-151	CER.CAPACITOR	150P	50V
C309	NEH91HM-225	E.CAPACITOR	2.2	50V
C310	NCB31HK-103	CER.CAPACITOR	0.010	50V

[VIDEO]

Symbol No.	Part No.	Part Name	Description
C311	NCB31CK-223	CER.CAPACITOR	0.022 16V
C312	NCB31HK-103	CER.CAPACITOR	0.010 50V
C313	NCS31HJ-6R0	CER.CAPACITOR	6.0P 50V
C314	NCB31HK-103	CER.CAPACITOR	0.010 50V
C315	NCS31HJ-220	CER.CAPACITOR	22P 50V (U)
C316	NEH91EM-336	E.CAPACITOR	33 25V
C317	NCS31HJ-390	CER.CAPACITOR	39P 50V
C318	NCF31CZ-104	CER.CAPACITOR	0.10 16V
C319	NCB31HK-103	CER.CAPACITOR	0.010 50V
C320	NEH91HM-225	E.CAPACITOR	2.2 50V
C321	NCS31HJ-121	CER.CAPACITOR	120P 50V
C322	NCS31HJ-221	CER.CAPACITOR	220P 50V
C323	NCS31HJ-390	CER.CAPACITOR	39P 50V
C324	NCB31HK-103	CER.CAPACITOR	0.010 50V
C325	NEH91EM-336	E.CAPACITOR	33 25V
C326	NCB31HK-103	CER.CAPACITOR	0.010 50V
C327	NCB31HK-103	CER.CAPACITOR	0.010 50V
C328	NEH91CM-476	E.CAPACITOR	47 16V
C329	NCB31HK-103	CER.CAPACITOR	0.010 50V
C330	NCS31HJ-820	CER.CAPACITOR	82P 50V
VC1	NAT3112-400	TR CAP	40P, VCXO F
VC2	NAT3112-400	TR CAP	40P, 320Fh VCO
VC3	NAT3112-400	TR CAP	40P, P.BST.PHS. (E)
L1	YU41134-470	COIL	47μH
L2	YU41134-470	COIL	47μH
L3	YU41134-470	COIL	47μH
L4	PU58201-330	COIL	33μH (U)
	PU58201-220	COIL	22μH (E)
L5	YU41134-470	COIL	47μH
L6	YU41134-470	COIL	47μH
L7	YU41134-470	COIL	47μH
L8	PU58201-221	COIL	220μH
L9	PU58201-4R7	COIL	4.7μH
L10	PU58201-180	COIL	18μH (E)
L11	YU41134-101	COIL	100μH
L12	PU58201-331	COIL	330μH
L13	PU58201-560	COIL	56μH
L14	PU58201-680	COIL	68μH
L15	PU58201-331	COIL	330μH
L17	YU41134-101	COIL	100μH
L18	PU58201-221	COIL	220μH (U)
	PU58201-5R6	COIL	5.6μH (E)
L19	YU41134-101	COIL	100μH
L20	PU58201-270	COIL	27μH (U)
	PU58201-560	COIL	56μH (E)
L21	PU58201-470	COIL	47μH (U)
L22	PU58201-221	COIL	220μH
L23	PU58201-560	COIL	56μH (U)
	PU58201-150	COIL	15μH (E)
L24	PU58201-560	COIL	56μH
L25	YU41134-101	COIL	100μH
L26	PU58201-270	COIL	27μH
L27	PU58201-680	COIL	68μH (U)
L28	PU58201-221	COIL	220μH (E)
L29	PU58201-100	COIL	10μH (U)
	PU58201-150	COIL	15μH (E)
L30	YU41134-470	COIL	47μH

Symbol No.	Part No.	Part Name	Description
L31	PU58201-150	COIL	15μH
L32	YU41134-470	COIL	47μH
L33	PU58201-120	COIL	12μH
L34	YU41134-470	COIL	47μH
L35	YU41134-470	COIL	47μH
L36	PU58201-180	COIL	18μH
L37	PU58201-470	COIL	47μH (E)
L38	YU41134-470	COIL	47μH
L39	YU41134-101	COIL	100μH
L40	PU58201-220	COIL	22μH (U)
	PU58201-1R2	COIL	1.2μH (E)
L41	PU58201-390	COIL	39μH (U)
L42	PU58201-5R6	COIL	5.6μH
L43	PU58201-390	COIL	39μH
L44	YU41134-470	COIL	47μH
L47	YU41134-470	COIL	47μH
L48	YU41134-470	COIL	47μH
L49	PU58201-221	COIL	220μH
L50	PU58201-331	COIL	330μH (U)
	PU58201-181	COIL	180μH (E)
L51	PU58201-150	COIL	15μH (E)
L52	PU58201-560	COIL	56μH
L53	PU58201-180	COIL	18μH
L54	PU54710-822	COIL	0.082mH (E)
L55	PU58201-120	COIL	12μH (U)
	PU58201-100	COIL	10μH (E)
L56	PU58201-101	COIL	100μH (U)
	PU58201-470	COIL	47μH (E)
L57	PU58201-820	COIL	82μH (U)
L58	YU41134-470	COIL	47μH
L59	PU58201-471	COIL	470μH
L60	YU41134-101	COIL	100μH
DL2	YU41083	COMB FILTER	(U)
	PU58971-3	COMB FILTER	(E)
X1	PEVB0347	CRYSTAL	3.579545MHz (U)
	PGZ02016	CRYSTAL	4.433619MHz (E)
TH1	ERT-D2FGL103S	THERMISTOR	
TH2	ERT-D2FGL103S	THERMISTOR	
TH3	ERT-D2FGL101S	THERMISTOR	
TH4	ERSA22J-272	T.RESISTOR	
CN1	PGZ01719-30	CONNECTOR	30PIN
CN2	SCV1770-004	CONNECTOR	4PIN
TP1	PGZ01015	TEST POINT	
TP2	PGZ01015	TEST POINT	
TP3	PGZ01015	TEST POINT	
TP4	PGZ01015	TEST POINT	
TP5	PGZ01015	TEST POINT	
TP6	PGZ01015	TEST POINT	
TP7	PGZ01015	TEST POINT	
TP8	PGZ01015	TEST POINT	
TP9	PGZ01015	TEST POINT	
TP10	PGZ01015	TEST POINT	

6.10 PRE/REC JUNC BOARD ASSEMBLY LIST 1 0

SCK2453-03-00A 1 0 ☐☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description
TP11	PGZ01015	TEST POINT	
TP12	PGZ01015	TEST POINT	
TP13	PGZ01015	TEST POINT	
TP17	PGZ01015	TEST POINT	
TP18	PGZ01015	TEST POINT	
TP19	PGZ01015	TEST POINT	
TP20	PGZ01015	TEST POINT	
TP21	PGZ01015	TEST POINT	
TP22	PGZ01015	TEST POINT	
TP23	PGZ01015	TEST POINT	
TP24	PGZ01015	TEST POINT	
TP25	PGZ01015	TEST POINT	
TP26	SCV1201-001	TEST POINT	
TP27	SCV1201-001	TEST POINT	
TP28	SCV1201-001	TEST POINT	
TP29	SCV1201-001	TEST POINT	
FL1	PGZ02088	LOW PASS FILTER	7MHz (U)
	PGZ01892	LOW PASS FILTER	13.3MHz (E)
FL2	PGZ02086	LOW PASS FILTER	2.8MHz (U)
	PGZ01897	DELAY LINE	250nsec (E)
FL3	PGZ02087	LOW PASS FILTER	2.8MHz (U)
	PGZ01898	LOW PASS FILTER	4.43MHz (E)
FL4	PELN0320	LOW PASS FILTER	5MHz
FL5	PGZ01445	DELAY LINE	100nsec
FL6	PGZ02089	BAN.PASS FILTER	4.21MHz (U)
	PGZ01893	BAN.PASS FILTER	5.36MHz (E)
FL7	PGZ02085	BAN.PASS FILTER	3.58MHz (U)
	PGZ01889	BAN.PASS FILTER	4.43MHz (E)
FL8	PGZ01328	LOW PASS FILTER	1.95MHz
FL9	PGZ01329	LOW PASS FILTER	1.3MHz
K1	PGZ00627	FERRATE BEADS	
K2	PGZ00627	FERRATE BEADS	
K3	PGZ00627	FERRATE BEADS	
K4	PGZ00627	FERRATE BEADS	

Symbol No.	Part No.	Part Name	Description
Q1	DTC124EU	TRANSISTOR	ROHM
Q2	DTA124EU	TRANSISTOR	ROHM
Q3	DTA124EU	TRANSISTOR	ROHM
Q4	2SC4081(QRS)	TRANSISTOR	ROHM
Q5	2SC4097(QR)	TRANSISTOR	ROHM
Q6	2SC4081(QRS)	TRANSISTOR	ROHM
R1	NRVA02D-2202	M.F.RESISTOR	22.0K 1/10W
R2	NRVA02D-4701	M.F.RESISTOR	4.70K 1/10W
R3	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R4	NRSA02J-4R7	M.G.RESISTOR	4.7 1/10W
R5	NRSA02J-393	M.G.RESISTOR	39K 1/10W
R6	NRSA02J-103	M.G.RESISTOR	10K 1/10W
R7	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R8	NRVA02D-4700	M.F.RESISTOR	470 1/10W
R9	NRSA02J-101	M.G.RESISTOR	100 1/10W
R101	NRSA02J-0R0	M.G.RESISTOR	0 1/10W
C1	NEF11CM-105	TAN.CAPACITOR	1.0 16V
C2	QFZ9011-393	MM CAP	0.039
C3	NCT03CH-561	CER.CAPACITOR	560P 50V
C4	NCB21HK-392	CER.CAPACITOR	3900P 50V
C5	NEH91CM-106	E.CAPACITOR	10 16V
C7	NFV41HJ-104	F CAP	0.10 50V
C8	NCB21EK-104	CER.CAPACITOR	0.10 25V
L1	YU40932-P	OSC COIL	
L2	PU58201-101	COIL	100μH
L3	PU54710-822	COIL	8.2mH
CN1	SCV1456-20S	CONNECTOR	20PIN
CN2	SSV1321-011	FPC CONNECTOR	11PIN
CN3	SSV2416-110	CONNECTOR	10PIN
CN4	SSV2416-102	CONNECTOR	2PIN
CN5	SSV2416-102	CONNECTOR	2PIN
TP1	SCV1201-001	TEST POINT	
TP2	SCV1201-001	TEST POINT	
TP3	SCV1201-001	TEST POINT	
TP4	SCV1201-001	TEST POINT	
TP5	SCV1201-001	TEST POINT	

6.11 AU BOARD ASSEMBLY LIST 1 1

SCK2453-04-00A

1 1 ☐☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description	
IC1	NJM2068MD	I.C.(M)	JRC	
D1	MA143A	DIODE	MATSUSHITA	
D2	HZM3.0NB1	ZENER DIODE	HITACHI	
R1	NRSA02J-562	M.G.RESISTOR	5.6K	1/10W
R2	NRVA02D-5600	M.F.RESISTOR	560	1/10W
R3	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R4	NRSA02J-101	M.G.RESISTOR	100	1/10W
R5	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R6	NRSA02J-153	M.G.RESISTOR	15K	1/10W
R7	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R10	NRVA02D-68R0	M.F.RESISTOR	68.0	1/10W
C4	NEH91AM-336	E.CAPACITOR	33	10V
C5	NEN11HM-105	NP.CAPACITOR	1.0	50V
C6	NCT03CH-681	CER.CAPACITOR	680P	50V
C7	NCB21HK-222	CER.CAPACITOR	2200P	50V
C8	NCB21EK-473	CER.CAPACITOR	0.047	25V
C9	NEH91AM-336	E.CAPACITOR	33	10V
C10	NEH91AM-336	E.CAPACITOR	33	10V
L1	SSV1330-150	COIL	15μH	
L2	SSV1330-150	COIL	15μH	
CN9	SCV1770-005	CONNECTOR	5PIN	
CN25	SCV1770-002	CONNECTOR	2PIN	
CN26	SCV1770-003	CONNECTOR	3PIN	

6.12 PRE/REC BOARD ASSEMBLY LIST 1 2

SCK2464-N0A

SCK2464-P0A

1 2 ☐☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description	
IC1	BA7746FS	I.C.(M)	ROHM	
IC3	TC4S71F	I.C.(M)	TOSHIBA	
IC6	UPC2320GS	I.C.(M)	NEC	
IC7	5VT51	I.C.(M)	JVC	
Q1	2SA1577(PQ)	TRANSISTOR	ROHM	
Q2	DTA114EU	TRANSISTOR	ROHM	
Q3	DTC144EU	TRANSISTOR	ROHM	
Q6	2SA1577(PQ)	TRANSISTOR	ROHM	
Q10	DTC144EU	TRANSISTOR	ROHM	
Q11	2SC4081(QRS)	TRANSISTOR	ROHM	
Q12	2SC4081(QRS)	TRANSISTOR	ROHM	
Q14	2SC4081(QRS)	TRANSISTOR	ROHM	
Q21	DTC124EU	TRANSISTOR	ROHM	
Q22	2SA1577(PQ)	TRANSISTOR	ROHM	
Q32	2SA1577(PQ)	TRANSISTOR	ROHM	
Q34	DTC124EU	TRANSISTOR	ROHM	
D2	DAN202U	DIODE	ROHM	
D3	DAN202U	DIODE	ROHM	
R1	NRSA02J-224	M.G.RESISTOR	220K	1/10W
R2	NRSA02J-100	M.G.RESISTOR	10	1/10W
R3	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R4	NRSA02J-122	M.G.RESISTOR	1.2K	1/10W
R5	NRSA02J-561	M.G.RESISTOR	560	1/10W
R6	NRSA02J-561	M.G.RESISTOR	560	1/10W
R7	NRSA02J-122	M.G.RESISTOR	1.2K	1/10W
R8	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R9	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R10	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R11	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R12	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R13	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R14	NRSA02J-912	M.G.RESISTOR	9.1K	1/10W
R15	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R16	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R17	NRSA02J-182	M.G.RESISTOR	1.8K	1/10W
R30	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R31	NRSA02J-821	M.G.RESISTOR	820	1/10W
R32	NRSA02J-821	M.G.RESISTOR	820	1/10W
R33	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R34	NRSA02J-821	M.G.RESISTOR	820	1/10W
R36	NRSA02J-561	M.G.RESISTOR	560	1/10W
R37	NRSA02J-681	M.G.RESISTOR	680	1/10W
R38	NRSA02J-681	M.G.RESISTOR	680	1/10W
R39	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R40	NRSA02J-0R0	M.G.RESISTOR	0	1/10W
R41	NRSA02J-220	M.G.RESISTOR	22	1/10W
R42	NRSA02J-3R9	M.G.RESISTOR	3.9	1/10W
R43	NRSA02J-3R9	M.G.RESISTOR	3.9	1/10W
R44	NRSA02J-220	M.G.RESISTOR	22	1/10W
R45	NRSA02J-220	M.G.RESISTOR	22	1/10W
R46	NRSA02J-220	M.G.RESISTOR	22	1/10W
R47	NRSA02J-221	M.G.RESISTOR	220	1/10W
R48	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R51	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R52	NRSA02J-332	M.G.RESISTOR	3.3K	1/10W

Symbol No.	Part No.	Part Name	Description
R59	NRSA02J-103	M.G.RESISTOR	10K 1/10W
R70	NRSA02J-392	M.G.RESISTOR	3.9K 1/10W
R72	NRSA02J-223	M.G.RESISTOR	22K 1/10W
R73	NRSA02J-223	M.G.RESISTOR	22K 1/10W
R80	NRSA02J-3R9	M.G.RESISTOR	3.9 1/10W
R82	NRSA02J-0R0	M.G.RESISTOR	0 1/10W
R84	NRSA02J-0R0	M.G.RESISTOR	0 1/10W
C1	NCB21HK-103	CER.CAPACITOR	0.010 50V
C2	NCS21HJ-101	CER.CAPACITOR	100P 50V
C3	NCF21CZ-105	CER.CAPACITOR	1.0 16V
C4	NCS21HJ-271	CER.CAPACITOR	270P 50V
C5	NCS21HJ-271	CER.CAPACITOR	270P 50V
C6	NCT03CH-821	CER.CAPACITOR	820P 50V
C7	NCT03CH-821	CER.CAPACITOR	820P 50V
C8	NCF21CZ-105	CER.CAPACITOR	1.0 16V
C9	NEA10JM-107	E.CAPACITOR	100 6.3V
C11	NCB21HK-102	CER.CAPACITOR	1000P 50V
C12	NCB21HK-102	CER.CAPACITOR	1000P 50V
C13	NCB21HK-103	CER.CAPACITOR	0.010 50V
C14	NCB21HK-103	CER.CAPACITOR	0.010 50V
C15	NCB21HK-103	CER.CAPACITOR	0.010 50V
C16	NEA10JM-107	E.CAPACITOR	100 6.3V
C17	NCB21HK-103	CER.CAPACITOR	0.010 50V
C18	NCB21HK-103	CER.CAPACITOR	0.010 50V
C19	NCB21HK-103	CER.CAPACITOR	0.010 50V
C29	NCB21EK-104	CER.CAPACITOR	0.10 25V
C30	NEH11CM-476	E.CAPACITOR	47 16V
C31	NCB21EK-104	CER.CAPACITOR	0.10 25V
C32	NCB21HK-103	CER.CAPACITOR	0.010 50V
C33	NCB21HK-103	CER.CAPACITOR	0.010 50V
C34	NEE21EM-474	TAN.CAPACITOR	0.47 25V
C35	NCB21HK-103	CER.CAPACITOR	0.010 50V
C36	NCB21HK-103	CER.CAPACITOR	0.010 50V
C37	NCB21HK-103	CER.CAPACITOR	0.010 50V
C38	NEH11CM-476	E.CAPACITOR	47 16V
C39	NCB21EK-104	CER.CAPACITOR	0.10 25V
C40	NCB21EK-104	CER.CAPACITOR	0.10 25V
C41	NEE21EM-474	TAN.CAPACITOR	0.47 25V
C42	NCB21EK-104	CER.CAPACITOR	0.10 25V
C43	NCB21EK-104	CER.CAPACITOR	0.10 25V
C44	NEE21EM-474	TAN.CAPACITOR	0.47 25V
C45	NEE21EM-474	TAN.CAPACITOR	0.47 25V
C46	NCB21EK-104	CER.CAPACITOR	0.10 25V
C47	NCB21EK-104	CER.CAPACITOR	0.10 25V
C48	NEE21EM-474	TAN.CAPACITOR	0.47 25V
C49	NCB21EK-104	CER.CAPACITOR	0.10 25V
C50	NCB21EK-104	CER.CAPACITOR	0.10 25V
C52	NCS21HJ-220	CER.CAPACITOR	22P 50V
C53	NCS21HJ-330	CER.CAPACITOR	33P 50V
C54	NCB21HK-103	CER.CAPACITOR	0.010 50V
C55	NCS21HJ-220	CER.CAPACITOR	22P 50V
C61	NCB21HK-103	CER.CAPACITOR	0.010 50V
C62	NEE51AM-106	TAN.CAPACITOR	10 10V
C63	NCT03CH-221	CER.CAPACITOR	220P 50V(U)
	NCT03CH-680	CER.CAPACITOR	68P 50V(E)
C69	NCB21HK-103	CER.CAPACITOR	0.010 50V
C75	NCB21HK-103	CER.CAPACITOR	0.010 50V
C76	NCB21HK-103	CER.CAPACITOR	0.010 50V

Symbol No.	Part No.	Part Name	Description
C78	NCB21HK-103	CER.CAPACITOR	0.010 50V
C81	NCB21HK-103	CER.CAPACITOR	0.010 50V
L1	PU58201-101	COIL	100μH
L2	PU58201-101	COIL	100μH
L3	PU58201-101	COIL	100μH
L7	PU58201-101	COIL	100μH
L8	PU58201-101	COIL	100μH
L9	PU58201-101	COIL	100μH
L10	PELN0840-1R2	COIL	100μH
L11	PU56175	TRANSFORMER	
CN1	SSV1321-011	FPC CONNECTOR	11PIN
CN2	SCV2644-113	FPC CONNECTOR	13PIN
CN3	SCV1770-009	CONNECTOR	9PIN
TP1	SCV1880-001	TEST POINT	
TP2	SCV1880-001	TEST POINT	
TP3	SCV1880-001	TEST POINT	
TP4	SCV1880-001	TEST POINT	
TP7	SCV1201-001	TEST POINT	
TP8	SCV1201-001	TEST POINT	
TP9	SCV1880-001	TEST POINT	
SLD1	PRS40032	SHIELD CASE1	
SLD2	PRS40033	SHIELD CASE2	

6.13 S/S BOARD ASSEMBLY LIST 13
SCK2453-01-N0A
SCK2453-01-P0A

13☐☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description
IC1	BA6405F	I.C.(M)	ROHM
IC2	BA10324F	I.C.(M)	ROHM
IC3	BA728F	I.C.(M)	ROHM
IC4	TC7W04F	I.C.(M)	TOSHIBA
IC5	BA10393F	I.C.(M)	ROHM
IC6	S-8051HN-CD	I.C.(M)	SEIKO
IC7	BU5753S	I.C.(M)	ROHM (U)
	BU3779S	I.C.(M)	ROHM (E)
IC12	MN50005JVES	I.C.(M)	
IC15	TC4S584F	I.C.(M)	TOSHIBA
IC16	TC4S584F	I.C.(M)	TOSHIBA
IC17	M38063E6-FP	I.C.(M)	MITSUBISHI
IC18	S-8054HNCB	I.C.(M)	SEIKO
IC19	TC4021BF	I.C.(M)	TOSHIBA
IC20	BA6109U2	I.C.(M)	ROHM
IC21	M6M80011AFP	I.C.(M)	MITSUBISHI
IC23	BA10339F	I.C.(M)	ROHM
IC24	S-81252HG	I.C.(M)	SEIKO
IC25	TC4021BF	I.C.(M)	TOSHIBA
IC27	TC4S11F	I.C.(M)	TOSHIBA
IC29	TC4W53F	I.C.(M)	TOSHIBA
IC30	TC4W53F	I.C.(M)	TOSHIBA
IC100	TA7805F	I.C.(M)	TOSHIBA
IC402	NJM2903M	I.C.(M)	JRC
IC403	TC4538BF	I.C.(M)	TOSHIBA
IC404	TC4S81F	I.C.(M)	TOSHIBA
IC501	TC4013BF	I.C.(M)	TOSHIBA
IC502	TC4W53F	I.C.(M)	TOSHIBA
Q1	DTC124EU	TRANSISTOR	ROHM
Q2	DTC124EU	TRANSISTOR	ROHM
Q3	DTC124EU	TRANSISTOR	ROHM
Q5	DTC124EU	TRANSISTOR	ROHM
Q6	2SB798	TRANSISTOR	NEC
Q7	2SA1502	TRANSISTOR	SANYO
Q8	2SB798	TRANSISTOR	NEC
Q9	2SA1502	TRANSISTOR	SANYO
Q11	2SC2412K(QR)	TRANSISTOR	ROHM
Q12	2SC2412K(QR)	TRANSISTOR	ROHM
Q13	DTA143ZK	TRANSISTOR	ROHM
Q14	DTA143ZK	TRANSISTOR	ROHM
Q15	DTC124EU	TRANSISTOR	ROHM
Q18	DTA124EU	TRANSISTOR	ROHM
Q19	DTC124EU	TRANSISTOR	ROHM
Q20	2SC2412K(QR)	TRANSISTOR	ROHM
Q25	FMG1	TRANSISTOR	SANKEN
Q26	FMG1	TRANSISTOR	SANKEN
Q29	DTC144EU	TRANSISTOR	ROHM
Q30	DTC124EU	TRANSISTOR	ROHM
Q501	DTC124EU	TRANSISTOR	ROHM
Q601	DTC144EU	TRANSISTOR	ROHM (E)
Q602	IMH6	TRANSISTOR	(U)
D1	MA736	DIODE	MATSUSHITA
D2	MA736	DIODE	MATSUSHITA
D3	HZM5.6NB2	ZENER DIODE	HITACHI
D4	HZM6.8NB2	ZENER DIODE	HITACHI
D5	DAN202U	DIODE	ROHM
D6	DAN202U	DIODE	ROHM
D7	DA204U	DIODE	ROHM
D8	DAN202U	DIODE	ROHM
D17	RD3.3EB2	ZENER DIODE	NEC
D18	1SS355	DIODE	ROHM
D25	MA742	DIODE	MATSUSHITA
D26	MA742	DIODE	MATSUSHITA
D28	RD9.1ESB2	ZENER DIODE	NEC
D30	MA720	DIODE	MATSUSHITA
D31	M1MA152A	DIODE	MOTOROLA
D401	DAN202U	DIODE	ROHM
D402	DAN202U	DIODE	ROHM
D410	MA142A	DIODE	MATSUSHITA
R1	NRSA02J-392	M.G.RESISTOR	3.9K 1/10W
R2	NRSA02J-222	M.G.RESISTOR	2.2K 1/10W
R3	NRVA02D-4701	M.F.RESISTOR	4.70K 1/10W
R4	NRSA02J-302	M.G.RESISTOR	3.0K 1/10W
R5	NRVA02D-4700	M.F.RESISTOR	470 1/10W
R6	NRVA02D-4700	M.F.RESISTOR	470 1/10W
R7	NRSA02J-272	M.G.RESISTOR	2.7K 1/10W
R8	NRSA02J-112	M.G.RESISTOR	1.1K 1/10W
R9	NRSA02J-304	M.G.RESISTOR	300K 1/10W
R10	NRSA02J-304	M.G.RESISTOR	300K 1/10W
R11	NRSA02J-104	M.G.RESISTOR	100K 1/10W
R12	NRSA02J-104	M.G.RESISTOR	100K 1/10W
R13	NRSA02J-103	M.G.RESISTOR	10K 1/10W
R14	NRSA02J-104	M.G.RESISTOR	100K 1/10W
R15	NRSA02J-105	M.G.RESISTOR	1.0M 1/10W
R16	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R17	NRSA02J-474	M.G.RESISTOR	470K 1/10W (U)
	NRSA02J-824	M.G.RESISTOR	820K 1/10W (E)
R18	NRVA02D-4700	M.F.RESISTOR	470 1/10W
R19	NRVA02D-3302	M.F.RESISTOR	33.0K 1/10W
R20	NRSA02J-392	M.G.RESISTOR	3.9K 1/10W
R21	NRSA02J-274	M.G.RESISTOR	270K 1/10W
R22	NRSA02J-563	M.G.RESISTOR	56K 1/10W (U)
	NRSA02J-823	M.G.RESISTOR	82K 1/10W (E)
R23	NRSA02J-104	M.G.RESISTOR	100K 1/10W
R24	NRVA02D-4701	M.F.RESISTOR	4.70K 1/10W
R25	NRSA02J-684	M.G.RESISTOR	680K 1/10W
R26	NRSA02J-823	M.G.RESISTOR	82K 1/10W (U)
	NRVA02D-2202	M.F.RESISTOR	22.0K 1/10W (E)
R27	NRSA02J-473	M.G.RESISTOR	47K 1/10W
R28	NRVA02D-3302	M.F.RESISTOR	33.0K 1/10W
R29	NRVA02D-3302	M.F.RESISTOR	33.0K 1/10W
R30	NRSA02J-153	M.G.RESISTOR	15K 1/10W
R31	NRVA02D-3302	M.F.RESISTOR	33.0K 1/10W
R32	NRSA02J-153	M.G.RESISTOR	15K 1/10W
R33	NRSA02J-105	M.G.RESISTOR	1.0M 1/10W
R35	NRSA02J-274	M.G.RESISTOR	270K 1/10W
R36	NRSA02J-274	M.G.RESISTOR	270K 1/10W
R39	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R40	NRSA02J-105	M.G.RESISTOR	1.0M 1/10W
R41	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R42	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R43	NRSA02J-0R0	M.G.RESISTOR	0 1/10W
R44	NRVA02D-3302	M.F.RESISTOR	33.0K 1/10W
R45	NRSA02J-103	M.G.RESISTOR	10K 1/10W
R46	NRSA02J-103	M.G.RESISTOR	10K 1/10W

Symbol No.	Part No.	Part Name	Description	
R50	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R51	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R52	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R53	NRSA02J-224	M.G.RESISTOR	220K	1/10W
R56	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R58	NRSA02J-154	M.G.RESISTOR	150K	1/10W
R64	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R65	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R66	NRSA02J-104	M.G.RESISTOR	100K	1/10W(U)
	NRSA02J-274	M.G.RESISTOR	270K	1/10W(E)
R67	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R68	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R69	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R72	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R73	NRVA02D-2202	M.F.RESISTOR	22.0K	1/10W
R75	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R76	NRSA02J-563	M.G.RESISTOR	56K	1/10W
R77	NRSA02J-562	M.G.RESISTOR	5.6K	1/10W
R78	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R79	NRVA02D-3302	M.F.RESISTOR	33.0K	1/10W
R80	NRVA02D-3302	M.F.RESISTOR	33.0K	1/10W
R81	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R82	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R83	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R84	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R86	NRSA02J-101	M.G.RESISTOR	100	1/10W
R87	NRSA02J-124	M.G.RESISTOR	120K	1/10W
R88	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R89	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R90	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R92	NRSA02J-393	M.G.RESISTOR	39K	1/10W
R93	NRSA02J-682	M.G.RESISTOR	6.8K	1/10W
R94	NRSA02J-682	M.G.RESISTOR	6.8K	1/10W
R95	NRSA02J-153	M.G.RESISTOR	15K	1/10W
R96	NRSA02J-153	M.G.RESISTOR	15K	1/10W
R103	NRSA02J-274	M.G.RESISTOR	270K	1/10W
R104	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R105	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R106	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R107	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R108	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R109	NRVA02D-2202	M.F.RESISTOR	22.0K	1/10W
R111	NRVA02D-8201	M.F.RESISTOR	8.20K	1/10W
R112	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R113	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R114	NRSA02J-0R0	M.G.RESISTOR	0	1/10W
R115	NRSA02J-224	M.G.RESISTOR	220K	1/10W
R116	NRSA02J-104	M.G.RESISTOR	100K	1/10W(U)
	NRVA02D-3302	M.F.RESISTOR	33.0K	1/10W(E)
R117	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R118	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R119	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R120	NRSA02J-0R0	M.G.RESISTOR	0	1/10W
R121	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R122	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R123	NRVA02D-3302	M.F.RESISTOR	33.0K	1/10W
R124	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R125	NRVA02D-3302	M.F.RESISTOR	33.0K	1/10W
R126	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W

Symbol No.	Part No.	Part Name	Description	
R127	NRSA02J-224	M.G.RESISTOR	220K	1/10W
R128	NRSA02J-224	M.G.RESISTOR	220K	1/10W
R129	NRVA02D-3302	M.F.RESISTOR	33.0K	1/10W
R130	NRVA02D-3302	M.F.RESISTOR	33.0K	1/10W
R131	NRVA02D-3302	M.F.RESISTOR	33.0K	1/10W
R133	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R134	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R135	NRSA02J-562	M.G.RESISTOR	5.6K	1/10W
R136	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R137	NRVA02D-3302	M.F.RESISTOR	33.0K	1/10W
R138	NRVA02D-3302	M.F.RESISTOR	33.0K	1/10W
R139	NRVA02D-3302	M.F.RESISTOR	33.0K	1/10W
R140	NRVA02D-3302	M.F.RESISTOR	33.0K	1/10W
R141	NRVA02D-3302	M.F.RESISTOR	33.0K	1/10W
R142	NRVA02D-3302	M.F.RESISTOR	33.0K	1/10W
R143	NRVA02D-3302	M.F.RESISTOR	33.0K	1/10W
R144	NRVA02D-3302	M.F.RESISTOR	33.0K	1/10W
R145	NRVA02D-3302	M.F.RESISTOR	33.0K	1/10W
R146	NRVA02D-3302	M.F.RESISTOR	33.0K	1/10W
R147	NRVA02D-3302	M.F.RESISTOR	33.0K	1/10W
R148	NRVA02D-3302	M.F.RESISTOR	33.0K	1/10W
R149	NRSA02J-562	M.G.RESISTOR	5.6K	1/10W
R150	NRSA02J-682	M.G.RESISTOR	6.8K	1/10W
R151	NRSA02J-682	M.G.RESISTOR	6.8K	1/10W
R152	NRSA02J-682	M.G.RESISTOR	6.8K	1/10W
R153	NRSA02J-562	M.G.RESISTOR	5.6K	1/10W
R154	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R155	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R156	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R157	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R158	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R159	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R160	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R161	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R162	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R163	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R164	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R165	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R166	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R167	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R168	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R169	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R170	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R171	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R172	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R173	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R174	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R175	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R176	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R177	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R178	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R179	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R180	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R181	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R182	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R183	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R184	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R185	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R186	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R187	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W

[S/S]

Symbol No.	Part No.	Part Name	Description	
R188	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R189	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R190	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R192	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R193	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R199	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R208	NRVA02D-3302	M.F.RESISTOR	33.0K	1/10W
R209	NRVA02D-3302	M.F.RESISTOR	33.0K	1/10W
R210	NRSA02J-154	M.G.RESISTOR	150K	1/10W
R211	NRSA02J-154	M.G.RESISTOR	150K	1/10W
R212	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R213	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R214	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R215	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R218	NRSA02J-0R0	M.G.RESISTOR	0	1/10W(U)
R219	NRSA02J-0R0	M.G.RESISTOR	0	1/10W(U)
R220	NRSA02J-0R0	M.G.RESISTOR	0	1/10W(E)
R223	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R224	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R228	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R230	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R231	NRSA02J-0R0	M.G.RESISTOR	0	1/10W(U)
R402	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R403	NRSA02J-392	M.G.RESISTOR	3.9K	1/10W
R404	NRSA02J-562	M.G.RESISTOR	5.6K	1/10W
R405	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R406	NRSA02J-152	M.G.RESISTOR	1.5K	1/10W
R407	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W
R501	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R502	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W
R503	NRVA02D-3302	M.F.RESISTOR	33.0K	1/10W
R601	NRSA02J-0R0	M.G.RESISTOR	0	1/10W(E)
R602	NRVA02D-3302	M.F.RESISTOR	33.0K	1/10W(U)
R604	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R610	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W
R611	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W
R612	NRSA02J-0R0	M.G.RESISTOR	0	1/10W
VR1	NVP1415-203	TRIM.RESISTOR	TRK	
VR2	NVP1415-504	TRIM.RESISTOR	SW	MM
VR3	NVP1415-502	TRIM.RESISTOR	B	
VR4	NVP1415-504	TRIM.RESISTOR	F.SERVO	
C1	NEH90JM-107	E.CAPACITOR	100	6.3V
C2	NCB21HK-103	CER.CAPACITOR	0.010	50V
C3	NCB21HK-103	CER.CAPACITOR	0.010	50V
C4	NCT03CH-121	CER.CAPACITOR	120P	50V
C5	NCT03CH-121	CER.CAPACITOR	120P	50V
C6	PGZ01800-687	E.CAPACITOR	680	
C7	NCB21HK-222	CER.CAPACITOR	2200P	50V
C8	NEA11CM-107	E.CAPACITOR	100	16V
C9	NCB21HK-222	CER.CAPACITOR	2200P	50V
C10	NEA11CM-107	E.CAPACITOR	100	16V
C11	NCB21HK-332	CER.CAPACITOR	3300P	50V
C12	NEH91HM-105	E.CAPACITOR	1.0	50V
C13	NCB21HK-103	CER.CAPACITOR	0.010	50V
C14	NEH91CM-106	E.CAPACITOR	10	16V
C15	NCT03CH-471	CER.CAPACITOR	470P	50V
C16	NEH91CM-106	E.CAPACITOR	10	16V

Symbol No.	Part No.	Part Name	Description	
C17	NEH91CM-106	E.CAPACITOR	10	16V
C18	NCB21HK-102	CER.CAPACITOR	1000P	50V
C19	NEH91CM-476	E.CAPACITOR	47	16V
C20	NEH91HM-105	E.CAPACITOR	1.0	50V
C21	NCB21HK-222	CER.CAPACITOR	2200P	50V
C22	NCB21HK-102	CER.CAPACITOR	1000P	50V
C23	NEH90JM-226	E.CAPACITOR	22	6.3V
C24	NEN11HM-224	NP.CAPACITOR	0.22	50V
C25	NCB21HK-153	CER.CAPACITOR	0.015	50V
C26	NEN11HM-474	NP.CAPACITOR	0.47	50V(U)
	NEN11HM-224	NP.CAPACITOR	0.22	50V(E)
C27	NCB21HK-332	CER.CAPACITOR	3300P	50V
C28	NEN11HM-474	NP.CAPACITOR	0.47	50V
C30	NEH90JM-107	E.CAPACITOR	100	6.3V
C31	NCB21HK-102	CER.CAPACITOR	1000P	50V
C32	NCB21HK-102	CER.CAPACITOR	1000P	50V
C33	NFV41HJ-823	F CAP	0.082	50V
C34	NCB21HK-102	CER.CAPACITOR	1000P	50V
C35	NCB21HK-102	CER.CAPACITOR	1000P	50V
C36	NCB21HK-103	CER.CAPACITOR	0.010	50V
C37	NCB21HK-332	CER.CAPACITOR	3300P	50V
C38	NCB21EK-104	CER.CAPACITOR	0.10	25V
C40	NCB21HK-152	CER.CAPACITOR	1500P	50V
C41	NCT03CH-330	CER.CAPACITOR	33P	50V
C42	NCT03CH-330	CER.CAPACITOR	33P	50V
C43	NCT03CH-561	CER.CAPACITOR	560P	50V
C44	NCB21HK-102	CER.CAPACITOR	1000P	50V
C45	NCB21EK-104	CER.CAPACITOR	0.10	25V
C46	NCT03CH-330	CER.CAPACITOR	33P	50V
C47	NCT03CH-330	CER.CAPACITOR	33P	50V
C61	NCB21EK-104	CER.CAPACITOR	0.10	25V
C62	NCT03CH-330	CER.CAPACITOR	33P	50V
C63	NCT03CH-330	CER.CAPACITOR	33P	50V
C64	NEH91HM-105	E.CAPACITOR	1.0	50V
C65	NEN11HM-105	NP.CAPACITOR	1.0	50V
C66	NCB21HK-103	CER.CAPACITOR	0.010	50V
C67	NCB21HK-103	CER.CAPACITOR	0.010	50V
C68	NCB21EK-104	CER.CAPACITOR	0.10	25V
C69	NCB21HK-333	CER.CAPACITOR	0.033	50V
C70	QEA40HZ-224	E.CAPACITOR	0.22	5V
C71	NEF11CM-105	TAN.CAPACITOR	1.0	16V
C72	NEF11CM-105	TAN.CAPACITOR	1.0	16V
C73	NEH90JM-107	E.CAPACITOR	100	6.3V
C74	NCB21EK-104	CER.CAPACITOR	0.10	25V
C75	NCB21HK-223	CER.CAPACITOR	0.022	50V
C76	NCB21HK-223	CER.CAPACITOR	0.022	50V
C77	NCB21HK-223	CER.CAPACITOR	0.022	50V
C100	NCB21EK-104	CER.CAPACITOR	0.10	25V
C101	NCB21EK-104	CER.CAPACITOR	0.10	25V
C102	QCF11HP-103	CER.CAPACITOR	0.010	50V(E)
C401	NFV51CJ-104	F CAP	0.10	16V
C402	NCB21HK-333	CER.CAPACITOR	0.033	50V
C404	NCB21HK-153	CER.CAPACITOR	0.015	50V
C501	NEE21DM-475	TAN.CAPACITOR	4.7	20V
C502	NEE21DM-475	TAN.CAPACITOR	4.7	20V
L1	PU56181-151	CHOKE COIL	150μH	

6.14 MDA BOARD ASSEMBLY LIST 1 4
SCK2453-05-00A 1 4 ☐☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description
X1	SCV2683-001	CRYSTAL	4.92MHz
X2	SSV2662	CRYSTAL	3.58MHz (U)
	SCV2682-001	CRYSTAL	4.43MHz (E)
CF1	CSAC2.00MGCM-TC	CERA LOCK	2MHz
TH1	PU52108-2R2	POSISTOR	
CN1	PGZ01519-100	CONNECTOR	100PIN
CN2	SSV2416-102	CONNECTOR	2PIN
CN3	SSV2416-102	CONNECTOR	2PIN
TP1	SCV1880-001	TEST POINT	
TP2	SCV1880-001	TEST POINT	
TP3	SCV1880-001	TEST POINT	
TP4	SCV1880-001	TEST POINT	
TP5	SCV1880-001	TEST POINT	
TP6	SCV1880-001	TEST POINT	
TP7	SCV1880-001	TEST POINT	
TP8	SCV1880-001	TEST POINT	
TP9	SCV1880-001	TEST POINT	
TP10	SCV1880-001	TEST POINT	
TP11	SCV1880-001	TEST POINT	
TP12	SCV1880-001	TEST POINT	
TP13	SCV1880-001	TEST POINT	
TP14	SCV1880-001	TEST POINT	
K1	PGZ00354	FERRATE BEADS	
T1	YU41190	TRANS	
T2	YU41190	TRANS	
SLD1	PRS40025	SHIELD CASE	
SLD2	PU61042	SHIELD COVER	
SLD3	PU61043	SHIELD PLATE	
BK1	PRD43842-01-01	BRACKET(PWB)	
SC1	SDST2606Z	SCREW	M2.6×6,FOR BK1

Symbol No.	Part No.	Part Name	Description
IC1	BA6452	I.C.(M)	ROHM
D1	DAN202U	DIODE	ROHM
D2	MA736	DIODE	MATSUSHITA
D3	MA736	DIODE	MATSUSHITA
D4	MA736	DIODE	MATSUSHITA
R1	NRSA02J-152	M.G.RESISTOR	1.5K 1/10W
R2	NRSA02J-154	M.G.RESISTOR	150K 1/10W
R3	NRVA02D-2202	M.F.RESISTOR	22.0K 1/10W
R4	NRSA02J-222	M.G.RESISTOR	2.2K 1/10W
R5	NRSA02J-101	M.G.RESISTOR	100 1/10W
R6	NRSA02J-2R2	M.G.RESISTOR	2.2 1/10W
R7	NRSA02J-2R2	M.G.RESISTOR	2.2 1/10W
R8	NRSA02J-2R2	M.G.RESISTOR	2.2 1/10W
R10	NRSA02J-104	M.G.RESISTOR	100K 1/10W
R11	NRSA02J-2R2	M.G.RESISTOR	2.2 1/10W
R12	NRSA02J-2R2	M.G.RESISTOR	2.2 1/10W
R13	NRSA02J-2R2	M.G.RESISTOR	2.2 1/10W
C1	QCY81CK-224	CER.CAPACITOR	0.22 16V
C2	NCS21HJ-471	CER.CAPACITOR	470P 50V
C3	QCY81CK-224	CER.CAPACITOR	0.22 16V
C4	NCB21EK-104	CER.CAPACITOR	0.10 25V
C5	NEE51AM-106	TAN.CAPACITOR	10 10V
C6	NEE51AM-106	TAN.CAPACITOR	10 10V
C7	NCB21EK-223	CER.CAPACITOR	0.022 25V
C8	NEE51AM-106	TAN.CAPACITOR	10 10V
C9	NEE51AM-106	TAN.CAPACITOR	10 10V
C10	NCB21EK-104	CER.CAPACITOR	0.10 25V
C11	NEE51AM-106	TAN.CAPACITOR	10 10V
C12	NCT03CH-101	CER.CAPACITOR	100P 50V
CN1	SCV2477-010	CONNECTOR	10PIN
CN2	SSV2416-102	CONNECTOR	2PIN
CN3	SSV2416-115	CONNECTOR	15PIN

6.15 M JUNC BOARD ASSEMBLY LIST 15

SCK2456-03-00A

15☐☐☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description
IC1	TA7805F	I.C.(M)	TOSHIBA
D1	ERA82-004	DIODE	FUJIELECTRIC
C1	NCB21EK-104	CER.CAPACITOR	0.10 25V
C2	NCB21EK-104	CER.CAPACITOR	0.10 25V
CN1	SCV1456-20S	CONNECTOR	20PIN
CN2	SCV1456-20S	CONNECTOR	20PIN
CN4	SCV2447-010	CONNECTOR	10PIN
CN5	YU40108-20	FPC CONNECTOR	20PIN
CN6	SCV1978-L02	CONNECTOR	2PIN
CN8	SCV1978-L03	CONNECTOR	3PIN

6.16 AUCP BOARD ASSEMBLY LIST 16

SCK1143-N0A

SCK1143-P0A

16☐☐☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description
IC1	NJM2068MD	I.C.(M)	JRC
IC2	NJM2068MD	I.C.(M)	JRC
IC3	M5218AFP	I.C.(M)	MITSUBISHI
IC4	TC4052BF	I.C.(M)	TOSHIBA
IC5	M5282FP	I.C.(M)	MITSUBISHI
IC6	BA10358F	I.C.(M)	ROHM
IC7	M5282FP	I.C.(M)	MITSUBISHI
IC8	BA10358F	I.C.(M)	ROHM
IC9	M5282FP	I.C.(M)	MITSUBISHI
IC10	BA10358F	I.C.(M)	ROHM
IC11	BA10358F	I.C.(M)	ROHM
IC12	TC4052BF	I.C.(M)	TOSHIBA
IC13	M5201FP	I.C.(M)	MITSUBISHI
IC14	M5201FP	I.C.(M)	MITSUBISHI
IC15	M5216FP	I.C.(M)	MITSUBISHI
IC16	M5218AFP	I.C.(M)	MITSUBISHI
IC22	M5282FP	I.C.(M)	MITSUBISHI
IC23	TC4S66F	I.C.(M)	TOSHIBA
IC24	TC4S66F	I.C.(M)	TOSHIBA
IC201	JCP0038	I.C.(M)	JVC
IC203	TC4094BF	I.C.(M)	TOSHIBA
IC204	XRA7765AS	I.C.(M)	EXAR
IC205	M5218AFP	I.C.(M)	MITSUBISHI
IC206	TC4052BF	I.C.(M)	TOSHIBA
IC401	MB90T678PF	I.C.(M)	FUJITSU
IC402	S-2914AIF10	I.C.(M)	SEIKO
IC403	S-8054HNCB	I.C.(M)	SEIKO
IC404	MB89012-109	I.C.(M)	FUJITSU
IC405	RTC-4513A	I.C.(M)	EPSON
IC406	UPD6453GT-101	I.C.(M)	NEC
IC407	M62354FP	I.C.(M)	MITSUBISHI
IC408	MC74HC367F	I.C.(M)	MOTOROLA
IC409	MC74HC00AF	I.C.(M)	MOTOROLA
IC410	MC74HC373AF	I.C.(M)	MOTOROLA
IC411	PLSC1142	I.C.(M)	M27C512-15F1
IC412	LH5168N-10L	I.C.(M)	SHARP
IC413	NJM2904M	I.C.(M)	JRC
IC414	NJM062M	I.C.(M)	JRC
IC415	TC4S81F	I.C.(M)	TOSHIBA
IC416	NJM062M	I.C.(M)	JRC
IC417	TC4066BF	I.C.(M)	TOSHIBA
IC418	NJM062M	I.C.(M)	JRC
IC419	TC4066BF	I.C.(M)	TOSHIBA
IC420	NJM062M	I.C.(M)	JRC
IC421	TC4066BF	I.C.(M)	TOSHIBA
IC422	NJM062M	I.C.(M)	JRC
IC423	NJM062M	I.C.(M)	JRC
IC424	NJM2904M	I.C.(M)	JRC
IC425	TC7S08F	I.C.(M)	TOSHIBA
IC426	TC7S08F	I.C.(M)	TOSHIBA
IC427	TC7SU04F	I.C.(M)	TOSHIBA
IC501	PLSC1143	I.C.(M)	MN17P1603FB
IC502	SCV2678-001	LCD	
IC503	M51944BML	I.C.(M)	MITSUBISHI
IC504	S-8054HNCB	I.C.(M)	SEIKO
IC551	TC74HC4094AF	I.C.(M)	TOSHIBA
Q1	2SC4081(QRS)	TRANSISTOR	ROHM
Q2	2SC4081(QRS)	TRANSISTOR	ROHM

Symbol No.	Part No.	Part Name	Description
Q3	DTA114EU	TRANSISTOR	ROHM
Q4	2SA1576(QRS)	TRANSISTOR	ROHM
Q5	2SC4081(QRS)	TRANSISTOR	ROHM
Q6	2SC4081(QRS)	TRANSISTOR	ROHM
Q7	2SC4081(QRS)	TRANSISTOR	ROHM
Q8	2SC4081(QRS)	TRANSISTOR	ROHM
Q9	2SC4081(QRS)	TRANSISTOR	ROHM
Q10	DTA144EU	TRANSISTOR	ROHM
Q11	DTA144EU	TRANSISTOR	ROHM
Q12	DTC144EU	TRANSISTOR	ROHM
Q13	DTA144EU	TRANSISTOR	ROHM
Q14	DTA144EU	TRANSISTOR	ROHM
Q15	2SC4081(QRS)	TRANSISTOR	ROHM
Q16	2SC4081(QRS)	TRANSISTOR	ROHM
Q17	2SC4081(QRS)	TRANSISTOR	ROHM
Q20	DTA144EU	TRANSISTOR	ROHM
Q201	DTC114EU	TRANSISTOR	ROHM
Q202	2SK208(O)	F.E.T.	TOSHIBA
Q203	2SK208(O)	F.E.T.	TOSHIBA
Q204	DTA114EU	TRANSISTOR	ROHM
Q205	DTC114EU	TRANSISTOR	ROHM
Q206	DTA114EU	TRANSISTOR	ROHM
Q207	DTA114EU	TRANSISTOR	ROHM
Q208	2SC4081(QRS)	TRANSISTOR	ROHM
Q209	2SC4081(QRS)	TRANSISTOR	ROHM
Q210	DTA114EU	TRANSISTOR	ROHM
Q401	DTC124EU	TRANSISTOR	ROHM
Q402	MSC3930(B)	TRANSISTOR	MOTOROLA
Q403	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q404	MSC3930(B)	TRANSISTOR	MOTOROLA
Q405	2SB1219(QR)	TRANSISTOR	MATSUSHITA
Q406	2SD1820(QR)	TRANSISTOR	MATSUSHITA
Q501	DTC124EU	TRANSISTOR	ROHM
Q502	DTA124EU	TRANSISTOR	ROHM
Q503	2SD1820(QR)	TRANSISTOR	MATSUSHITA
Q551	DTC124EU	TRANSISTOR	ROHM
D1	DA204U	DIODE	ROHM
D2	DA204U	DIODE	ROHM
D3	DA204U	DIODE	ROHM
D4	1SS133	DIODE	ROHM
D5	DA204U	DIODE	ROHM
D6	1SS133	DIODE	ROHM
D7	DA204U	DIODE	ROHM
D8	1SS133	DIODE	ROHM
D9	DA204U	DIODE	ROHM
D10	1SS133	DIODE	ROHM
D11	DA204U	DIODE	ROHM
D12	DAP202U	DIODE	ROHM
D13	HZM5.1NB2	ZENER DIODE	HITACHI
D14	DAP202U	DIODE	ROHM
D201	DA204U	DIODE	ROHM
D202	HZM5.1NB2	ZENER DIODE	HITACHI
D401	MA143A	DIODE	MATSUSHITA
D402	MA142A	DIODE	MATSUSHITA
D403	MA142A	DIODE	MATSUSHITA
D404	MA142A	DIODE	MATSUSHITA
D405	MA142A	DIODE	MATSUSHITA
D406	MA143A	DIODE	MATSUSHITA

Symbol No.	Part No.	Part Name	Description
D407	MA142A	DIODE	MATSUSHITA
D408	MA142A	DIODE	MATSUSHITA
D409	MA142A	DIODE	MATSUSHITA
D410	MA142A	DIODE	MATSUSHITA
D411	MA143A	DIODE	MATSUSHITA
D412	MA143A	DIODE	MATSUSHITA
D413	MA143A	DIODE	MATSUSHITA
D551	MA143A	DIODE	MATSUSHITA
D552	MA143A	DIODE	MATSUSHITA
D553	MA143A	DIODE	MATSUSHITA
D554	MA143A	DIODE	MATSUSHITA
D555	MA143A	DIODE	MATSUSHITA
D556	MA143A	DIODE	MATSUSHITA
D557	MA143A	DIODE	MATSUSHITA
D558	MA143A	DIODE	MATSUSHITA
D559	MA143A	DIODE	MATSUSHITA
D560	MA143A	DIODE	MATSUSHITA
D561	MA143A	DIODE	MATSUSHITA
D562	MA143A	DIODE	MATSUSHITA
D563	MA143A	DIODE	MATSUSHITA
D564	MA143A	DIODE	MATSUSHITA
LD501	GL5HD60	L.E.D.	
LD551	SLM-13VWF	L.E.D.	
LD552	SLM-13VWF	L.E.D.	
LD553	SLM-13VWF	L.E.D.	
LD554	SLM-13VWF	L.E.D.	
R1	NRSA02J-103	M.G.RESISTOR	10K 1/10W
R2	NRSA02J-223	M.G.RESISTOR	22K 1/10W
R3	NRSA02J-103	M.G.RESISTOR	10K 1/10W
R4	NRSA02J-681	M.G.RESISTOR	680 1/10W
R5	NRSA02J-681	M.G.RESISTOR	680 1/10W
R6	NRSA02J-103	M.G.RESISTOR	10K 1/10W
R7	NRSA02J-103	M.G.RESISTOR	10K 1/10W
R8	NRSA02J-473	M.G.RESISTOR	47K 1/10W
R9	NRSA02J-473	M.G.RESISTOR	47K 1/10W
R10	NRSA02J-101	M.G.RESISTOR	100 1/10W
R11	NRSA02J-334	M.G.RESISTOR	330K 1/10W
R12	NRSA02J-152	M.G.RESISTOR	1.5K 1/10W
R14	NRSA02J-152	M.G.RESISTOR	1.5K 1/10W
R15	NRVA02D-4701	M.F.RESISTOR	4.70K 1/10W
R16	NRVA02D-4701	M.F.RESISTOR	4.70K 1/10W
R17	NRVA02D-4701	M.F.RESISTOR	4.70K 1/10W
R18	NRVA02D-4701	M.F.RESISTOR	4.70K 1/10W
R20	NRSA02J-0R0	M.G.RESISTOR	0 1/10W
R24	NRSA02J-561	M.G.RESISTOR	560 1/10W
R25	NRSA02J-122	M.G.RESISTOR	1.2K 1/10W
R26	NRSA02J-122	M.G.RESISTOR	1.2K 1/10W
R27	NRSA02J-122	M.G.RESISTOR	1.2K 1/10W
R28	NRSA02J-103	M.G.RESISTOR	10K 1/10W
R29	NRSA02J-103	M.G.RESISTOR	10K 1/10W
R30	NRSA02J-103	M.G.RESISTOR	10K 1/10W
R31	NRSA02J-473	M.G.RESISTOR	47K 1/10W
R32	NRSA02J-473	M.G.RESISTOR	47K 1/10W
R33	NRSA02J-123	M.G.RESISTOR	12K 1/10W
R35	NRSA02J-222	M.G.RESISTOR	2.2K 1/10W
R36	NRSA02J-0R0	M.G.RESISTOR	0 1/10W

[AUCP]

Symbol No.	Part No.	Part Name	Description	
R37	NRVA02D-9101	M.F.RESISTOR	9.10K	1/10W
R38	NRSA02J-393	M.G.RESISTOR	39K	1/10W
R39	NRSA02J-0R0	M.G.RESISTOR	0	1/10W
R40	NRSA02J-0R0	M.G.RESISTOR	0	1/10W
R41	NRSA02J-393	M.G.RESISTOR	39K	1/10W
R42	NRSA02J-153	M.G.RESISTOR	15K	1/10W
R43	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R44	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R45	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R46	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R47	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R48	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R49	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R50	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R51	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R52	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R53	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R54	NRSA02J-184	M.G.RESISTOR	180K	1/10W
R55	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R56	NRSA02J-154	M.G.RESISTOR	150K	1/10W
R57	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R58	NRSA02J-153	M.G.RESISTOR	15K	1/10W
R59	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R60	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R61	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R62	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R63	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R64	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R65	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R66	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R67	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R68	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R69	NRSA02J-154	M.G.RESISTOR	150K	1/10W
R70	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R71	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R72	NRSA02J-184	M.G.RESISTOR	180K	1/10W
R73	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R74	NRSA02J-153	M.G.RESISTOR	15K	1/10W
R76	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R78	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R79	NRSA02J-124	M.G.RESISTOR	120K	1/10W
R80	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R81	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R82	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R83	NRSA02J-154	M.G.RESISTOR	150K	1/10W
R84	NRSA02J-154	M.G.RESISTOR	150K	1/10W
R85	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R86	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R87	NRSA02J-154	M.G.RESISTOR	150K	1/10W
R88	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R89	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R90	NRSA02J-184	M.G.RESISTOR	180K	1/10W
R91	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R92	NRSA02J-153	M.G.RESISTOR	15K	1/10W
R94	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R96	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R97	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R98	NRSA02J-124	M.G.RESISTOR	120K	1/10W
R99	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R100	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W

Symbol No.	Part No.	Part Name	Description	
R101	NRSA02J-154	M.G.RESISTOR	150K	1/10W
R102	NRSA02J-154	M.G.RESISTOR	150K	1/10W
R103	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R104	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R105	NRSA02J-154	M.G.RESISTOR	150K	1/10W
R106	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R107	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R108	NRSA02J-184	M.G.RESISTOR	180K	1/10W
R109	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R110	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R111	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R112	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R113	NRSA02J-392	M.G.RESISTOR	3.9K	1/10W
R114	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R115	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R116	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R117	NRSA02J-392	M.G.RESISTOR	3.9K	1/10W
R118	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R121	NRSA02J-122	M.G.RESISTOR	1.2K	1/10W
R122	NRSA02J-122	M.G.RESISTOR	1.2K	1/10W
R123	NRSA02J-154	M.G.RESISTOR	150K	1/10W
R124	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R127	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R128	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R129	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R130	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R131	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R132	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R133	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R134	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R135	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R136	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R137	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R138	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R139	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R140	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R142	NRSA02J-0R0	M.G.RESISTOR	0	1/10W
R144	NRSA02J-0R0	M.G.RESISTOR	0	1/10W
R145	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R146	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R147	NRSA02J-330	M.G.RESISTOR	33	1/10W
R148	NRSA02J-680	M.G.RESISTOR	68	1/10W
R149	NRSA02J-680	M.G.RESISTOR	68	1/10W
R150	NRSA02J-330	M.G.RESISTOR	33	1/10W
R151	NRSA02J-122	M.G.RESISTOR	1.2K	1/10W
R152	NRSA02J-122	M.G.RESISTOR	1.2K	1/10W
R153	NRSA02J-682	M.G.RESISTOR	6.8K	1/10W
R154	NRSA02J-682	M.G.RESISTOR	6.8K	1/10W
R155	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R156	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R157	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R158	NRSA02J-122	M.G.RESISTOR	1.2K	1/10W
R159	NRSA02J-122	M.G.RESISTOR	1.2K	1/10W
R160	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R161	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R162	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R163	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R164	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R165	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R166	NRSA02J-0R0	M.G.RESISTOR	0	1/10W

Symbol No.	Part No.	Part Name	Description	
R177	NRSA02J-681	M.G.RESISTOR	680	1/10W
R180	NRSA02J-682	M.G.RESISTOR	6.8K	1/10W
R181	NRSA02J-682	M.G.RESISTOR	6.8K	1/10W
R182	NRSA02J-273	M.G.RESISTOR	27K	1/10W
R183	NRSA02J-563	M.G.RESISTOR	56K	1/10W
R184	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R185	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R186	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R187	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R188	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R199	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R201	NRSA02J-562	M.G.RESISTOR	5.6K	1/10W
R202	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R203	NRSA02J-511	M.G.RESISTOR	510	1/10W
R204	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R205	NRVA02D-5102	M.F.RESISTOR	51.0K	1/10W
R206	NRSA02J-822	M.G.RESISTOR	8.2K	1/10W
R207	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R208	NRSA02J-101	M.G.RESISTOR	100	1/10W
R209	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R210	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W (U)
	NRSA02J-182	M.G.RESISTOR	1.8K	1/10W (E)
R211	NRSA02J-821	M.G.RESISTOR	820	1/10W
R212	NRSA02J-821	M.G.RESISTOR	820	1/10W
R213	NRSA02J-332	M.G.RESISTOR	3.3K	1/10W
R214	NRSA02J-332	M.G.RESISTOR	3.3K	1/10W
R215	NRSA02J-183	M.G.RESISTOR	18K	1/10W
R216	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R217	NRSA02J-0R0	M.G.RESISTOR	0	1/10W (U)
R218	NRSA02J-0R0	M.G.RESISTOR	0	1/10W (E)
R219	NRVA02D-300	M.F.RESISTOR	30.0K	1/10W
R220	NRSA02J-822	M.G.RESISTOR	8.2K	1/10W
R221	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R222	NRSA02J-183	M.G.RESISTOR	18K	1/10W
R223	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R224	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R225	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W
R226	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R228	NRSA02J-0R0	M.G.RESISTOR	0	1/10W
R229	NRSA02J-511	M.G.RESISTOR	510	1/10W
R230	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R231	NRVA02D-5102	M.F.RESISTOR	51.0K	1/10W
R232	NRSA02J-101	M.G.RESISTOR	100	1/10W
R233	NRSA02J-822	M.G.RESISTOR	8.2K	1/10W
R234	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R235	NRSA02J-123	M.G.RESISTOR	12K	1/10W
R236	NRSA02J-562	M.G.RESISTOR	5.6K	1/10W
R238	NRSA02J-684	M.G.RESISTOR	680K	1/10W
R239	NRSA02J-684	M.G.RESISTOR	680K	1/10W
R242	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R243	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R244	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R245	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R246	NRSA02J-822	M.G.RESISTOR	8.2K	1/10W (U)
	NRSA02J-393	M.G.RESISTOR	39K	1/10W (E)
R247	NRSA02J-683	M.G.RESISTOR	68K	1/10W
R248	NRSA02J-0R0	M.G.RESISTOR	0	1/10W (U)
R249	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W (U)
	NRSA02J-152	M.G.RESISTOR	1.5K	1/10W (E)
R250	NRSA02J-101	M.G.RESISTOR	100	1/10W

Symbol No.	Part No.	Part Name	Description	
R251	NRSA02J-122	M.G.RESISTOR	1.2K	1/10W (U)
	NRSA02J-821	M.G.RESISTOR	820	1/10W (E)
R252	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R253	NRSA02J-153	M.G.RESISTOR	15K	1/10W (U)
	NRSA02J-223	M.G.RESISTOR	22K	1/10W (E)
R254	NRSA02J-101	M.G.RESISTOR	100	1/10W
R255	NRSA02J-563	M.G.RESISTOR	56K	1/10W
R256	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R257	NRSA02J-101	M.G.RESISTOR	100	1/10W
R258	NRSA02J-563	M.G.RESISTOR	56K	1/10W
R259	NRSA02J-154	M.G.RESISTOR	150K	1/10W
R260	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R261	NRSA02J-0R0	M.G.RESISTOR	0	1/10W
R262	NRSA02J-562	M.G.RESISTOR	5.6K	1/10W
R263	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W
R264	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R265	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R266	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R267	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R268	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R269	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R270	NRSA02J-273	M.G.RESISTOR	27K	1/10W
R271	NRSA02J-123	M.G.RESISTOR	12K	1/10W
R272	NRSA02J-562	M.G.RESISTOR	5.6K	1/10W
R273	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R274	NRSA02J-4R7	M.G.RESISTOR	4.7	1/10W
R275	NRSA02J-123	M.G.RESISTOR	12K	1/10W
R276	NRSA02J-100	M.G.RESISTOR	10	1/10W
R300	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R301	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R303	NRSA02J-124	M.G.RESISTOR	120K	1/10W
R304	NRSA02J-124	M.G.RESISTOR	120K	1/10W
R306	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R401	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R402	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R403	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R404	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R405	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R406	NRSA02J-153	M.G.RESISTOR	15K	1/10W
R407	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R408	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R409	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R410	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R411	NRSA02J-124	M.G.RESISTOR	120K	1/10W (U)
	NRSA02J-473	M.G.RESISTOR	47K	1/10W (E)
R412	NRSA02J-473	M.G.RESISTOR	47K	1/10W (U)
	NRSA02J-224	M.G.RESISTOR	220K	1/10W (E)
R413	NRSA02J-683	M.G.RESISTOR	68K	1/10W
R414	NRSA02J-124	M.G.RESISTOR	120K	1/10W
R415	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R416	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R417	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R418	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R419	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R420	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R421	NRSA02J-473	M.G.RESISTOR	47K	1/10W (U)
	NRSA02J-273	M.G.RESISTOR	27K	1/10W (E)
R422	NRSA02J-224	M.G.RESISTOR	220K	1/10W
R423	NRSA02J-124	M.G.RESISTOR	120K	1/10W

[AUCP]

Symbol No.	Part No.	Part Name	Description	
R424	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R425	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R426	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R427	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R428	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R429	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R430	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R431	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R432	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R433	NRSA02J-153	M.G.RESISTOR	15K	1/10W
R434	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R435	NRSA02J-153	M.G.RESISTOR	15K	1/10W
R436	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R437	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R438	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R439	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R440	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R441	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R442	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R443	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R444	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R445	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R446	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R447	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R448	NRSA02J-273	M.G.RESISTOR	27K	1/10W
R449	NRSA02J-392	M.G.RESISTOR	3.9K	1/10W
R450	NRSA02J-101	M.G.RESISTOR	100	1/10W
R451	NRSA02J-273	M.G.RESISTOR	27K	1/10W
R452	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R453	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R454	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R455	NRSA02J-332	M.G.RESISTOR	3.3K	1/10W
R456	NRSA02J-561	M.G.RESISTOR	560	1/10W
R457	NRSA02J-561	M.G.RESISTOR	560	1/10W
R458	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R459	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R460	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R461	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R462	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R463	NRSA02J-152	M.G.RESISTOR	1.5K	1/10W
R464	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R465	NRSA02J-101	M.G.RESISTOR	100	1/10W
R466	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R467	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R469	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R471	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R472	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R473	NRSA02J-0R0	M.G.RESISTOR	0	1/10W
R475	NRSA02J-124	M.G.RESISTOR	120K	1/10W
R476	NRSA02J-394	M.G.RESISTOR	390K	1/10W
R477	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R478	NRSA02J-101	M.G.RESISTOR	100	1/10W
R479	NRSA02J-101	M.G.RESISTOR	100	1/10W
R480	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R481	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R482	NRSA02J-101	M.G.RESISTOR	100	1/10W
R483	NRSA02J-101	M.G.RESISTOR	100	1/10W
R484	NRSA02J-101	M.G.RESISTOR	100	1/10W
R485	NRSA02J-101	M.G.RESISTOR	100	1/10W

Symbol No.	Part No.	Part Name	Description	
R486	NRSA02J-101	M.G.RESISTOR	100	1/10W
R487	NRSA02J-101	M.G.RESISTOR	100	1/10W
R488	NRSA02J-101	M.G.RESISTOR	100	1/10W
R489	NRSA02J-101	M.G.RESISTOR	100	1/10W
R490	NRSA02J-101	M.G.RESISTOR	100	1/10W
R491	NRSA02J-101	M.G.RESISTOR	100	1/10W
R492	NRSA02J-101	M.G.RESISTOR	100	1/10W
R493	NRSA02J-101	M.G.RESISTOR	100	1/10W
R494	NRSA02J-101	M.G.RESISTOR	100	1/10W
R495	NRSA02J-101	M.G.RESISTOR	100	1/10W
R496	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R501	NRSA02J-681	M.G.RESISTOR	680	1/10W
R502	NRSA02J-681	M.G.RESISTOR	680	1/10W
R503	NRSA02J-681	M.G.RESISTOR	680	1/10W
R504	NRSA02J-122	M.G.RESISTOR	1.2K	1/10W
R505	NRSA02J-681	M.G.RESISTOR	680	1/10W
R506	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R507	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R508	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R509	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R510	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R511	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R512	NRSA02J-0R0	M.G.RESISTOR	0	1/10W (U)
R513	NRSA02J-101	M.G.RESISTOR	100	1/10W
R514	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R515	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R516	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R517	NRSA02J-0R0	M.G.RESISTOR	0	1/10W
R518	NRSA02J-564	M.G.RESISTOR	560K	1/10W
R519	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R520	NRSA02J-224	M.G.RESISTOR	220K	1/10W
R521	NRSA02J-224	M.G.RESISTOR	220K	1/10W
R522	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R523	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R524	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R525	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R526	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R527	NRSA02J-474	M.G.RESISTOR	470K	1/10W
R528	NRSA02J-823	M.G.RESISTOR	82K	1/10W
R529	NRSA02J-101	M.G.RESISTOR	100	1/10W
R530	NRSA02J-0R0	M.G.RESISTOR	0	1/10W
R531	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R532	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R533	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R551	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R552	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R553	NRSA02J-221	M.G.RESISTOR	220	1/10W
R554	NRSA02J-221	M.G.RESISTOR	220	1/10W
R555	NRSA02J-221	M.G.RESISTOR	220	1/10W
R556	NRSA02J-221	M.G.RESISTOR	220	1/10W
R557	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R558	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R559	NRSA02J-332	M.G.RESISTOR	3.3K	1/10W
R560	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R561	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R562	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R563	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R564	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R565	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R566	NRSA02J-223	M.G.RESISTOR	22K	1/10W

Symbol No.	Part No.	Part Name	Description	
R567	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R568	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R569	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R570	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R571	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R572	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R573	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R574	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R575	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R576	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R577	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R601	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R602	NRSA02J-223	M.G.RESISTOR	22K	1/10W
VR1	PGZ01538	TRIM.RESISTOR	AUX	REC LEVEL
VR2	PGZ01538	TRIM.RESISTOR	MIC	REC LEVEL
VR3	NVP1415-103	TRIM.RESISTOR	L-ch	MONITOR
VR4	NVP1415-103	TRIM.RESISTOR	R-ch	MONITOR
VR5	NVP1415-103	TRIM.RESISTOR	L-ch	METER ADJ
VR6	NVP1415-103	TRIM.RESISTOR	R-ch	METER ADJ
VR201	NVP1415-503	TRIM.RESISTOR	R-ch	PB LEVEL
VR202	NVP1415-103	TRIM.RESISTOR	R-ch	CARR.ADJ
VR203	NVP1415-503	TRIM.RESISTOR	L-ch	PB LEVEL
VR204	NVP1415-103	TRIM.RESISTOR	L-ch	CARR.ADJ
VR205	NVP1415-103	TRIM.RESISTOR	N.AUD	REC LEVEL
VR206	NVP1415-102	TRIM.RESISTOR	PB	EQ
VR207	NVP1415-103	TRIM.RESISTOR	N.AUD	PB LEVEL
VR208	NVP1415-104	TRIM.RESISTOR	BIAS	LEVEL
VR401	NVP1415-503	TRIM.RESISTOR	R-Y	(U)
	NVP1415-104	TRIM.RESISTOR	R-Y	(E)
VR402	NVP1415-104	TRIM.RESISTOR	B-Y	
VR403	NVP1415-503	TRIM.RESISTOR	NAM	ERROR
C1	NCT03CH-122	CER.CAPACITOR	1200P	50V
C2	NCT03CH-222	CER.CAPACITOR	2200P	50V
C3	NCT03CH-222	CER.CAPACITOR	2200P	50V
C4	NEH91EM-475	E.CAPACITOR	4.7	25V
C5	NEH91EM-475	E.CAPACITOR	4.7	25V
C6	NEH61CM-476	E.CAPACITOR	47	16V
C7	NEN10JM-226	NP.CAPACITOR	22	6.3V
C8	NEH61CM-476	E.CAPACITOR	47	16V
C9	NCT03CH-101	CER.CAPACITOR	100P	50V
C10	NCT03CH-101	CER.CAPACITOR	100P	50V
C11	NEH61CM-476	E.CAPACITOR	47	16V
C12	NCT03CH-101	CER.CAPACITOR	100P	50V
C13	NEH91EM-475	E.CAPACITOR	4.7	25V
C14	NEH91EM-475	E.CAPACITOR	4.7	25V
C15	NEH91EM-475	E.CAPACITOR	4.7	25V
C16	NEH61CM-476	E.CAPACITOR	47	16V
C20	NEH61CM-476	E.CAPACITOR	47	16V
C22	NEH91EM-475	E.CAPACITOR	4.7	25V
C23	NEH91EM-475	E.CAPACITOR	4.7	25V
C24	NEH90JM-336	E.CAPACITOR	33	6.3V
C26	NEH90JM-336	E.CAPACITOR	33	6.3V
C28	NCT03CH-470	CER.CAPACITOR	47P	50V
C29	NEN11AM-106	NP.CAPACITOR	10	10V
C30	NEH61CM-476	E.CAPACITOR	47	16V
C32	NEH61CM-476	E.CAPACITOR	47	16V
C33	NEH61CM-476	E.CAPACITOR	47	16V

Symbol No.	Part No.	Part Name	Description	
C34	NEN11EM-475	NP.CAPACITOR	4.7	25V
C35	NEH91EM-475	E.CAPACITOR	4.7	25V
C36	NEH91EM-475	E.CAPACITOR	4.7	25V
C37	NCT03CH-101	CER.CAPACITOR	100P	50V
C38	NEH91EM-475	E.CAPACITOR	4.7	25V
C39	NEH61CM-476	E.CAPACITOR	47	16V
C40	NEN11AM-106	NP.CAPACITOR	10	10V
C41	NEF11CM-105	TAN.CAPACITOR	1.0	16V
C42	NEF11CM-105	TAN.CAPACITOR	1.0	16V
C43	NEH61CM-476	E.CAPACITOR	47	16V
C44	NEH91EM-475	E.CAPACITOR	4.7	25V
C45	NEN11EM-475	NP.CAPACITOR	4.7	25V
C46	NCT03CH-101	CER.CAPACITOR	100P	50V
C47	NEH91EM-475	E.CAPACITOR	4.7	25V
C48	NEH91EM-475	E.CAPACITOR	4.7	25V
C49	NEH61CM-476	E.CAPACITOR	47	16V
C50	NEN11AM-106	NP.CAPACITOR	10	10V
C51	NEF11CM-105	TAN.CAPACITOR	1.0	16V
C52	NEF11CM-105	TAN.CAPACITOR	1.0	16V
C53	NEH61CM-476	E.CAPACITOR	47	16V
C54	NEH91EM-475	E.CAPACITOR	4.7	25V
C55	NEN11EM-475	NP.CAPACITOR	4.7	25V
C56	NCT03CH-101	CER.CAPACITOR	100P	50V
C57	NEH91EM-475	E.CAPACITOR	4.7	25V
C58	NEH91EM-475	E.CAPACITOR	4.7	25V
C59	NEH61CM-476	E.CAPACITOR	47	16V
C60	NEN11AM-106	NP.CAPACITOR	10	10V
C61	NEF11CM-105	TAN.CAPACITOR	1.0	16V
C62	NEF11CM-105	TAN.CAPACITOR	1.0	16V
C63	NEH61CM-476	E.CAPACITOR	47	16V
C64	NEH91EM-475	E.CAPACITOR	4.7	25V
C65	NEH91EM-475	E.CAPACITOR	4.7	25V
C66	NCT03CH-101	CER.CAPACITOR	100P	50V
C67	NEH91EM-475	E.CAPACITOR	4.7	25V
C68	NEN11EM-475	NP.CAPACITOR	4.7	25V
C69	NEH61CM-476	E.CAPACITOR	47	16V
C70	NEN11AM-106	NP.CAPACITOR	10	10V
C71	NEF11CM-105	TAN.CAPACITOR	1.0	16V
C72	NEF11CM-105	TAN.CAPACITOR	1.0	16V
C73	NEH61CM-476	E.CAPACITOR	47	16V
C74	NEH61CM-476	E.CAPACITOR	47	16V
C75	NEH61CM-476	E.CAPACITOR	47	16V
C76	NEH61CM-476	E.CAPACITOR	47	16V
C78	NEH61CM-476	E.CAPACITOR	47	16V
C81	NEH91EM-336	E.CAPACITOR	33	25V
C82	NEH61CM-476	E.CAPACITOR	47	16V
C83	NEH61CM-476	E.CAPACITOR	47	16V
C84	NEH91EM-475	E.CAPACITOR	4.7	25V
C85	NEH61CM-476	E.CAPACITOR	47	16V
C86	NEH91EM-475	E.CAPACITOR	4.7	25V
C87	NEH91EM-475	E.CAPACITOR	4.7	25V
C88	NEH91EM-475	E.CAPACITOR	4.7	25V
C89	NEH61CM-476	E.CAPACITOR	47	16V
C90	NEH90JM-476	E.CAPACITOR	47	6.3V
C91	NCT03CH-100	CER.CAPACITOR	10P	50V
C93	NCT03CH-100	CER.CAPACITOR	10P	50V
C94	NEH60JM-107	E.CAPACITOR	100	6.3V
C95	NEH60JM-107	E.CAPACITOR	100	6.3V
C96	NCB21EK-104	CER.CAPACITOR	0.10	25V

[AUCP]

Symbol No.	Part No.	Part Name	Description	
C97	NCB21EK-104	CER.CAPACITOR	0.10	25V
C98	NEH61CM-476	E.CAPACITOR	47	16V
C99	NEH61CM-226	E.CAPACITOR	22	16V
C100	NEH91EM-475	E.CAPACITOR	4.7	25V
C101	NEH91EM-475	E.CAPACITOR	4.7	25V
C102	NEH61CM-226	E.CAPACITOR	22	16V
C123	NEH61CM-476	E.CAPACITOR	47	16V
C124	NCT03CH-221	CER.CAPACITOR	220P	50V
C125	NCT03CH-221	CER.CAPACITOR	220P	50V
C126	NEH90JM-336	E.CAPACITOR	33	6.3V
C127	NCT03CH-101	CER.CAPACITOR	100P	50V
C130	NCB21EK-104	CER.CAPACITOR	0.10	25V
C201	NEN11AM-106	NP.CAPACITOR	10	10V
C202	NCB21HK-103	CER.CAPACITOR	0.010	50V
C203	NCB21HK-103	CER.CAPACITOR	0.010	50V
C205	NEH60JM-107	E.CAPACITOR	100	6.3V
C206	NEH60JM-107	E.CAPACITOR	100	6.3V
C207	NCB21HK-103	CER.CAPACITOR	0.010	50V
C208	NEH60JM-107	E.CAPACITOR	100	6.3V
C209	NEH61CM-476	E.CAPACITOR	47	16V
C210	NEN11AM-106	NP.CAPACITOR	10	10V
C211	NEN11AM-106	NP.CAPACITOR	10	10V
C212	NCB21HK-103	CER.CAPACITOR	0.010	50V
C213	NEN11AM-106	NP.CAPACITOR	10	10V
C214	NCB21HK-103	CER.CAPACITOR	0.010	50V
C215	NFV41CJ-473	F CAP	0.047	16V
C216	NEH61AM-336	E.CAPACITOR	33	10V
C217	NEH91HM-225	E.CAPACITOR	2.2	50V
C218	NFV41CJ-333	F CAP	0.033	16V
C219	NEH61CM-106	E.CAPACITOR	10	16V
C220	NEH61CM-106	E.CAPACITOR	10	16V
C221	NEH91HM-225	E.CAPACITOR	2.2	50V
C222	NEH61CM-476	E.CAPACITOR	47	16V
C223	NFV41HJ-103	F CAP	0.010	50V
C224	NCB21HK-103	CER.CAPACITOR	0.010	50V
C225	NFV41HJ-223	T.F.CAPACITOR	0.022	50V
C226	NFV41HJ-104	F CAP	0.10	50V
C227	NCB21HK-103	CER.CAPACITOR	0.010	50V
C228	NFV41HJ-822	F CAP	8200P	50V
C229	NCT03CH-821	CER.CAPACITOR	820P	50V
C230	NFV41CJ-392	F CAP	3900P	16V
C231	NEH61CM-476	E.CAPACITOR	47	16V
C232	NCB21HK-103	CER.CAPACITOR	0.010	50V
C233	NCB21EK-104	CER.CAPACITOR	0.10	25V
C234	NCB21HK-103	CER.CAPACITOR	0.010	50V
C235	NCT03CH-561	CER.CAPACITOR	560P	50V
C237	NEH91HM-104	E.CAPACITOR	0.10	50V
C238	NEH91EM-475	E.CAPACITOR	4.7	25V
C239	NCB21EK-104	CER.CAPACITOR	0.10	25V
C240	NCB21HK-103	CER.CAPACITOR	0.010	50V
C241	NFV41CJ-473	F CAP	0.047	16V
C242	NEH61EM-336	E.CAPACITOR	33	25V
C243	NEH91HM-225	E.CAPACITOR	2.2	50V
C244	NFV41CJ-333	F CAP	0.033	16V
C245	NEH61CM-106	E.CAPACITOR	10	16V
C246	NEH61CM-106	E.CAPACITOR	10	16V
C247	NEH91HM-225	E.CAPACITOR	2.2	50V
C248	NFV41HJ-103	F CAP	0.010	50V
C249	NEH61CM-476	E.CAPACITOR	47	16V

Symbol No.	Part No.	Part Name	Description	
C250	NCB21HK-103	CER.CAPACITOR	0.010	50V
C251	NCB21HK-103	CER.CAPACITOR	0.010	50V
C252	NFV41HJ-822	F CAP	8200P	50V
C253	NFV41HJ-104	F CAP	0.10	50V
C254	NFV41HJ-223	T.F.CAPACITOR	0.022	50V
C255	NCT03CH-821	CER.CAPACITOR	820P	50V
C256	NFV41HJ-392	F CAP	3900P	50V
C257	NCB21EK-104	CER.CAPACITOR	0.10	25V
C258	NEH61EM-336	E.CAPACITOR	33	25V
C259	NEH61CM-476	E.CAPACITOR	47	16V
C260	NCB21EK-473	CER.CAPACITOR	0.047	25V
C261	NEH61HM-105	E.CAPACITOR	1.0	50V
C262	NEH61CM-476	E.CAPACITOR	47	16V
C263	NCB21HK-332	CER.CAPACITOR	3300P	50V (U)
	NCB21CK-224	CER.CAPACITOR	0.22	16V (E)
C264	NCT03CH-222	CER.CAPACITOR	2200P	50V (E)
C265	NFV41HJ-223	T.F.CAPACITOR	0.022	50V (U)
	NFV41HJ-273	F CAP	0.027	50V (E)
C266	NCB21HK-123	CER.CAPACITOR	0.012	50V (U)
	NCB21HK-183	CER.CAPACITOR	0.018	50V (E)
C267	NEN11AM-106	NP.CAPACITOR	10	10V
C268	NEH61CM-106	E.CAPACITOR	10	16V
C269	NCT03CH-821	CER.CAPACITOR	820P	50V
C270	NEF11EM-475	TAN.CAPACITOR	4.7	25V
C271	NEH61CM-106	E.CAPACITOR	10	16V
C272	NCB21CK-154	CER.CAPACITOR	0.15	16V (U)
	NCB21CK-224	CER.CAPACITOR	0.22	16V (E)
C273	NFV41HJ-563	F CAP	0.056	50V
C274	NCT03CH-221	CER.CAPACITOR	220P	50V
C275	NEH60JM-107	E.CAPACITOR	100	6.3V
C276	NEH61CM-106	E.CAPACITOR	10	16V
C277	NCB21EK-104	CER.CAPACITOR	0.10	25V
C278	NCT03CH-101	CER.CAPACITOR	100P	50V
C279	NCT03CH-101	CER.CAPACITOR	100P	50V
C280	NEH61CM-226	E.CAPACITOR	22	16V
C281	NEH61CM-226	E.CAPACITOR	22	16V
C282	NEN11AM-106	NP.CAPACITOR	10	10V
C283	NEN11AM-106	NP.CAPACITOR	10	10V
C284	NCT03CH-220	CER.CAPACITOR	22P	50V
C285	NEH61CM-106	E.CAPACITOR	10	16V
C286	NCB21HK-103	CER.CAPACITOR	0.010	50V
C287	NEA11AM-227	E.CAPACITOR	220	10V
C288	NCT03CH-561	CER.CAPACITOR	560P	50V
C289	QFV11HJ-333	S.M.F.CAPACITOR	0.033	50V
C290	NCB21HK-392	CER.CAPACITOR	3900P	50V
C291	NEH61CM-106	E.CAPACITOR	10	16V
C292	NCT03CH-181	CER.CAPACITOR	180P	50V
C293	NEH61CM-476	E.CAPACITOR	47	16V
C294	NEH61CM-476	E.CAPACITOR	47	16V
C300	NCT03CH-102	CER.CAPACITOR	1000P	50V
C301	NEN11AM-106	NP.CAPACITOR	10	10V
C401	NCB21EK-473	CER.CAPACITOR	0.047	25V
C402	NCB21EK-473	CER.CAPACITOR	0.047	25V
C403	NCB21EK-473	CER.CAPACITOR	0.047	25V
C404	NCB21EK-473	CER.CAPACITOR	0.047	25V
C405	NCB21EK-473	CER.CAPACITOR	0.047	25V
C406	NEH61CM-106	E.CAPACITOR	10	16V
C407	NCB21EK-473	CER.CAPACITOR	0.047	25V
C408	NCB21EK-473	CER.CAPACITOR	0.047	25V
C409	NCB21EK-473	CER.CAPACITOR	0.047	25V

Symbol No.	Part No.	Part Name	Description	
C410	NCB21EK-473	CER.CAPACITOR	0.047	25V
C411	NEH61CM-106	E.CAPACITOR	10	16V
C412	NEN11HM-105	NP.CAPACITOR	1.0	50V
C413	NCB21EK-473	CER.CAPACITOR	0.047	25V
C414	NCB21EK-473	CER.CAPACITOR	0.047	25V
C415	NCT03CH-150	CER.CAPACITOR	15P	50V
C416	NCB21EK-473	CER.CAPACITOR	0.047	25V
C417	NCB21EK-473	CER.CAPACITOR	0.047	25V
C418	NCB21EK-473	CER.CAPACITOR	0.047	25V
C419	NCB21EK-473	CER.CAPACITOR	0.047	25V
C420	NEF11VM-105	TAN.CAPACITOR	1.0	35V
C421	NEN11HM-105	NP.CAPACITOR	1.0	50V
C422	NCB21EK-473	CER.CAPACITOR	0.047	25V
C423	NCB21EK-473	CER.CAPACITOR	0.047	25V
C424	NEH91EM-106	E.CAPACITOR	10	25V
C425	NCB21EK-473	CER.CAPACITOR	0.047	25V
C426	NCB21EK-473	CER.CAPACITOR	0.047	25V
C427	NCB21EK-473	CER.CAPACITOR	0.047	25V
C428	NCB21EK-473	CER.CAPACITOR	0.047	25V
C429	NCB21EK-473	CER.CAPACITOR	0.047	25V
C430	NCB21EK-473	CER.CAPACITOR	0.047	25V
C431	NCT03CH-151	CER.CAPACITOR	150P	50V
C432	NCT03CH-181	CER.CAPACITOR	180P	50V
C433	NCB21EK-473	CER.CAPACITOR	0.047	25V
C434	NCB21EK-473	CER.CAPACITOR	0.047	25V
C435	NEH61CM-106	E.CAPACITOR	10	16V
C436	NCB21EK-473	CER.CAPACITOR	0.047	25V
C437	NCT03CH-680	CER.CAPACITOR	68P	50V
C438	NCT03CH-680	CER.CAPACITOR	68P	50V
C439	NCB21EK-473	CER.CAPACITOR	0.047	25V
C440	NCB21EK-473	CER.CAPACITOR	0.047	25V
C441	NCB21EK-473	CER.CAPACITOR	0.047	25V
C442	NCB21EK-473	CER.CAPACITOR	0.047	25V
C443	NCB21EK-473	CER.CAPACITOR	0.047	25V
C444	NCB21EK-473	CER.CAPACITOR	0.047	25V
C445	NCB21EK-473	CER.CAPACITOR	0.047	25V
C446	NCB21EK-473	CER.CAPACITOR	0.047	25V
C447	NCB21EK-473	CER.CAPACITOR	0.047	25V
C448	NCB21EK-473	CER.CAPACITOR	0.047	25V
C449	NEH61CM-476	E.CAPACITOR	47	16V
C450	NEH61CM-476	E.CAPACITOR	47	16V
C451	NEH61CM-476	E.CAPACITOR	47	16V
C452	NEH61CM-476	E.CAPACITOR	47	16V
C453	NEH61CM-476	E.CAPACITOR	47	16V
C454	NCB21EK-473	CER.CAPACITOR	0.047	25V
C455	NCB21EK-473	CER.CAPACITOR	0.047	25V
C456	NCB21EK-473	CER.CAPACITOR	0.047	25V
C457	NCB21EK-473	CER.CAPACITOR	0.047	25V
C460	NCB21EK-473	CER.CAPACITOR	0.047	25V
C461	NCB21EK-473	CER.CAPACITOR	0.047	25V
C462	NCB21EK-473	CER.CAPACITOR	0.047	25V
C463	NCB21EK-473	CER.CAPACITOR	0.047	25V
C501	NEH61CM-476	E.CAPACITOR	47	16V
C502	NCB21EK-473	CER.CAPACITOR	0.047	25V
C503	NCB21EK-473	CER.CAPACITOR	0.047	25V
C504	NEH61HM-105	E.CAPACITOR	1.0	50V
C507	NEF10JM-226	TAN.CAPACITOR	22	6.3V
C509	NCB21EK-473	CER.CAPACITOR	0.047	25V
C551	NCB21EK-473	CER.CAPACITOR	0.047	25V
C552	NCB21EK-473	CER.CAPACITOR	0.047	25V

Symbol No.	Part No.	Part Name	Description	
C553	NCB21EK-473	CER.CAPACITOR	0.047	25V
C554	NCB21EK-473	CER.CAPACITOR	0.047	25V
C555	NCB21EK-473	CER.CAPACITOR	0.047	25V
L1	YU41135-101	COIL	100μH	
L2	YU41135-101	COIL	100μH	
L10	SSV1330-150	COIL	15μH	
L201	YU41135-221	COIL	220μH	
L202	YU41135-221	COIL	220μH	
L203	YU41135-101	COIL	100μH	
L204	YU41135-101	COIL	100μH	
L205	PGZ00917-822	COIL	8.2mH	
L401	SCV1950-4R7	PEAKING COIL	4.7μH	
L402	SCV1950-150	PEAKING COIL	15μH	
L403	SSV1330-150	COIL	15μH	
L404	SSV1330-150	COIL	15μH	
L405	SSV1330-150	COIL	15μH	
L501	SSV1330-150	COIL	15μH	
LC201	YU40933	BAN.PASS FILTER	1.3MHz	(U)
	YU41191	BAN.PASS FILTER	1.4MHz	(E)
LC202	YU40934	BAN.PASS FILTER	1.7MHz	(U)
	YU41192	BAN.PASS FILTER	1.8MHz	(E)
X401	SCV2719-001	CRYSTAL	6.0MHz	
X501	SCV2719-001	CRYSTAL	6.0MHz	
S1	QSS1A42-L01	SLIDE SWITCH	INPUT LEVEL	
S2	QSS1A42-L01	SLIDE SWITCH	HiFi REC	
S3	QSS4E12-S02	SLIDE SWITCH	AUX REC LEVEL	
S4	QSS4E12-S02	SLIDE SWITCH	MIC REC LEVEL	
S201	SCV2730-001	SLIDE SW	SOURCE SELECT	
S202	SSV2664	SLIDE SWITCH	N.AUD LIMITER	
S401	SCV2247-004	SWITCH	FUNCTION	
S501	PGZ01852	TACT SWITCH	COUNTER RESET	
S502	PGZ01852	TACT SWITCH	ROM CLR	
S503	PGZ01852	TACT SWITCH	LCD CHECK PRG	
S504	PGZ01852	TACT SWITCH	SELECT	
S505	PGZ01852	TACT SWITCH	RESET(AL5V)	
S551	PGZ01852	TACT SWITCH	REC	
S552	PGZ01852	TACT SWITCH	STOP	
S553	PGZ01852	TACT SWITCH	REW	
S554	PGZ01852	TACT SWITCH	FF	
S555	PGZ01852	TACT SWITCH	PLAY	
S556	PGZ01852	TACT SWITCH	PAUSE	
S557	PGZ01852	TACT SWITCH	EJECT	
S558	QSS4E12-S02	SLIDE SWITCH	REC MODE	
S559	QSS4E12-S02	SLIDE SWITCH	V.SCAN ON/OFF	
S560	PGZ01852	TACT SWITCH	UP	
S561	PGZ01852	TACT SWITCH	DOWN	
S562	PGZ01852	TACT SWITCH	MODE	
S563	PGZ01852	TACT SWITCH	SET	
S564	SCV2729-001	SLIDE SWITCH	IRIS OV/NOR/UN	
S565	PGZ01852	TACT SWITCH	MAX GAIN	
S566	SCV2578-001	SLIDE SWITCH	FAS ON/OFF	
S567	SCV2584-001	SLIDE SWITCH	GAIN	
S568	PGZ01852	TACT SWITCH	DISP CHANGE	

[AUCP]

Symbol No.	Part No.	Part Name	Description
S569	SCV2584-001	SLIDE SWITCH	WHITE BAL
S570	PGZ01852	TACT SWITCH	AUTO WHITE
CN9	SCV1770-005	CONNECTOR	5PIN
CN11	SSV1321-024	CONNECTOR	24PIN
CN12	SSV1321-024	CONNECTOR	24PIN
CN13	SSV1321-024	CONNECTOR	24PIN
CN14	SCV1770-007	CONNECTOR	7PIN
CN15	SCV1770-003	CONNECTOR	3PIN
CN16	SCV1770-005	CONNECTOR	5PIN
CN17	SCV1770-004	CONNECTOR	4PIN
CN18	SCV1770-003	CONNECTOR	3PIN
CN20	SCV1770-006	CONNECTOR	6PIN
CN21	SCV1770-006	CONNECTOR	6PIN
TP2	SCV1880-001	TEST POINT	
TP3	SCV1880-001	TEST POINT	
TP4	SCV1880-001	TEST POINT	
TP5	SCV1880-001	TEST POINT	
TP6	SCV1880-001	TEST POINT	
TP7	SCV1880-001	TEST POINT	
TP8	SCV1880-001	TEST POINT	
TP9	SCV1880-001	TEST POINT	
TP10	SCV1880-001	TEST POINT	
TP11	SCV1880-001	TEST POINT	
TP12	SCV1880-001	TEST POINT	
TP13	SCV1880-001	TEST POINT	
TP41	SCV1880-001	TEST POINT	
TP42	SCV1880-001	TEST POINT	
TP43	SCV1880-001	TEST POINT	
TP44	SCV1880-001	TEST POINT	
TP45	SCV1880-001	TEST POINT	
TP46	SCV1880-001	TEST POINT	
TP51	SCV1880-001	TEST POINT	
TP52	SCV1880-001	TEST POINT	
TP53	SCV1880-001	TEST POINT	
TP54	SCV1880-001	TEST POINT	
TP55	SCV1880-001	TEST POINT	
TP56	SCV1880-001	TEST POINT	
TP57	SCV1880-001	TEST POINT	
TP58	SCV1880-001	TEST POINT	
TP59	SCV1880-001	TEST POINT	
TP60	SCV1880-001	TEST POINT	
TP61	SCV1880-001	TEST POINT	
TP62	SCV1880-001	TEST POINT	
TP63	SCV1880-001	TEST POINT	
TP64	SCV1880-001	TEST POINT	
TP65	SCV1880-001	TEST POINT	
TP66	SCV1880-001	TEST POINT	
TP67	SCV1880-001	TEST POINT	
TP68	SCV1880-001	TEST POINT	
TP69	SCV1880-001	TEST POINT	
TP70	SCV1880-001	TEST POINT	
TP71	SCV1880-001	TEST POINT	
TP72	SCV1880-001	TEST POINT	
TP73	SCV1880-001	TEST POINT	
TP74	SCV1880-001	TEST POINT	
TP100	SCV1880-001	TEST POINT	
TP101	SCV1880-001	TEST POINT	
BL1	PGZ01930	LAMP	
BT1	CR2032-HLD	BATTERY HOLDER	
T201	PGZ02195	OSC COIL	
BATT1	CR2032SN	BATTERY	
CL1	PU56729-2	WIRE CLAMP	
CL2	PU59191	CLAMP	
SKT1	SCV1841-028	IC SOCKET	FOR IC411
SPC1	SC43656-045	LED SPACER	

6.17 A/C HEAD BOARD ASSEMBLY LIST 17
SCK2453-06-00A 17☐☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description
CN1	SSV2416-106	CONNECTOR	6PIN

6.18 SW3 BOARD ASSEMBLY LIST 18
SCK2456-07-00A 18☐☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description
D1	MA143A	DIODE	MATSUSHITA
S7	SCV1639-001	PUSH SWITCH	VTR TRIGGER
CN15	SCV1978-L03	CONNECTOR	3PIN

6.19 EAR BOARD ASSEMBLY LIST 19
SCK2456-08-00A 19☐☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description
J3	SCV2702-001	MINI JACK	ϕ3.5
CN17	SCV1978-S04	CONNECTOR	

6.20 PS1 BOARD ASSEMBLY LIST 20

SCK2456-01-00A 20☐☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description
IC1	S-81252HG	I.C.(M)	SEIKO
IC2	TL1451CNS	I.C.(M)	TEXAS
IC3	NJM2904M	I.C.(M)	JRC
IC4	NJM2904M	I.C.(M)	JRC
Q1	2SA1244(Y)	TRANSISTOR	TOSHIBA
Q2	DTC124EU	TRANSISTOR	ROHM
Q3	2SD1820(QR)	TRANSISTOR	MATSUSHITA
Q101	2SA1244(Y)	TRANSISTOR	TOSHIBA
Q102	2SA1244(Y)	TRANSISTOR	TOSHIBA
Q103	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q104	2SA1244(Y)	TRANSISTOR	TOSHIBA
Q105	2SD1820(QR)	TRANSISTOR	MATSUSHITA
Q106	2SD1820(QR)	TRANSISTOR	MATSUSHITA
Q107	DTC124EU	TRANSISTOR	ROHM
Q108	2SA1244(Y)	TRANSISTOR	TOSHIBA
Q109	2SD1820(QR)	TRANSISTOR	MATSUSHITA
Q110	2SD1820(QR)	TRANSISTOR	MATSUSHITA
Q111	DTC124EU	TRANSISTOR	ROHM
Q201	2SA1244(Y)	TRANSISTOR	TOSHIBA
Q202	2SA1244(Y)	TRANSISTOR	TOSHIBA
Q203	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q204	2SA1244(Y)	TRANSISTOR	TOSHIBA
Q205	2SD1820(QR)	TRANSISTOR	MATSUSHITA
Q206	2SD1820(QR)	TRANSISTOR	MATSUSHITA
Q207	DTC124EU	TRANSISTOR	ROHM
Q208	2SA1244(Y)	TRANSISTOR	TOSHIBA
Q209	2SD1820(QR)	TRANSISTOR	MATSUSHITA
Q210	2SD1820(QR)	TRANSISTOR	MATSUSHITA
Q211	DTC124EU	TRANSISTOR	ROHM
D1	MA142A	DIODE	MATSUSHITA
D2	RD2.0EB1	ZENER DIODE	NEC
D3	SB540	DIODE	GENERAL INST
D4	SB540	DIODE	GENERAL INST
D5	SB140	DIODE	GENERAL INST
D6	LM4040CIM3X-2.5	2.5V/REFARENCE	
R1	NRSA02J-472	M.G.RESISTOR	4.7K 1/10W
R2	NRSA02J-102	M.G.RESISTOR	1.0K 1/10W
R3	NRVA02D-1002	M.F.RESISTOR	10.0K 1/10W
R4	NRVA02D-1002	M.F.RESISTOR	10.0K 1/10W
R5	NRVA02D-1002	M.F.RESISTOR	10.0K 1/10W
R6	NRVA02D-1002	M.F.RESISTOR	10.0K 1/10W
R7	NRSA02J-104	M.G.RESISTOR	100K 1/10W
R8	NRVA02D-1002	M.F.RESISTOR	10.0K 1/10W
R9	NRSA02J-224	M.G.RESISTOR	220K 1/10W
R10	NRSA02J-104	M.G.RESISTOR	100K 1/10W
R11	NRSA02J-223	M.G.RESISTOR	22K 1/10W
R12	NRSA02J-102	M.G.RESISTOR	1.0K 1/10W
R101	NRVA02D-1002	M.F.RESISTOR	10.0K 1/10W
R102	NRSA02J-271	M.G.RESISTOR	270 1/10W
R103	NRSA02J-271	M.G.RESISTOR	270 1/10W
R104	NRSA02J-102	M.G.RESISTOR	1.0K 1/10W
R105	NRSA02J-102	M.G.RESISTOR	1.0K 1/10W
R106	NRSA02J-102	M.G.RESISTOR	1.0K 1/10W
R107	NRSA02J-102	M.G.RESISTOR	1.0K 1/10W
R108	NRVA02D-1002	M.F.RESISTOR	10.0K 1/10W
R109	NRVA02D-3301	M.F.RESISTOR	3.30K 1/10W
R110	NRVA02D-2702	M.F.RESISTOR	27.0K 1/10W
R111	NRSA02J-102	M.G.RESISTOR	1.0K 1/10W
R112	NRSA02J-471	M.G.RESISTOR	470 1/10W
R113	NRSA02J-101	M.G.RESISTOR	100 1/10W
R114	NRVA02D-1502	M.F.RESISTOR	15.0K 1/10W
R115	NRVA02D-1502	M.F.RESISTOR	15.0K 1/10W
R117	NRSA02J-223	M.G.RESISTOR	22K 1/10W
R118	NRSA02J-223	M.G.RESISTOR	22K 1/10W
R119	NRSA02J-102	M.G.RESISTOR	1.0K 1/10W
R120	NRSA02J-101	M.G.RESISTOR	100 1/10W
R121	NRSA02J-471	M.G.RESISTOR	470 1/10W
R122	NRVA02D-1502	M.F.RESISTOR	15.0K 1/10W
R123	NRVA02D-1502	M.F.RESISTOR	15.0K 1/10W
R125	NRSA02J-223	M.G.RESISTOR	22K 1/10W
R126	NRSA02J-223	M.G.RESISTOR	22K 1/10W
R201	NRVA02D-1002	M.F.RESISTOR	10.0K 1/10W
R202	NRSA02J-271	M.G.RESISTOR	270 1/10W
R203	NRSA02J-271	M.G.RESISTOR	270 1/10W
R204	NRSA02J-102	M.G.RESISTOR	1.0K 1/10W
R205	NRSA02J-102	M.G.RESISTOR	1.0K 1/10W
R206	NRSA02J-102	M.G.RESISTOR	1.0K 1/10W
R207	NRSA02J-102	M.G.RESISTOR	1.0K 1/10W
R208	NRVA02D-1502	M.F.RESISTOR	15.0K 1/10W
R209	NRVA02D-2701	M.F.RESISTOR	2.70K 1/10W
R210	NRVA02D-1502	M.F.RESISTOR	15.0K 1/10W
R211	NRSA02J-102	M.G.RESISTOR	1.0K 1/10W
R212	NRSA02J-471	M.G.RESISTOR	470 1/10W
R213	NRSA02J-101	M.G.RESISTOR	100 1/10W
R214	NRVA02D-1502	M.F.RESISTOR	15.0K 1/10W
R215	NRVA02D-5601	M.F.RESISTOR	5.60K 1/10W
R216	NRVA02D-1500	M.F.RESISTOR	150 1/10W
R217	NRSA02J-223	M.G.RESISTOR	22K 1/10W
R218	NRSA02J-223	M.G.RESISTOR	22K 1/10W
R219	NRSA02J-102	M.G.RESISTOR	1.0K 1/10W
R220	NRSA02J-101	M.G.RESISTOR	100 1/10W
R221	NRSA02J-471	M.G.RESISTOR	470 1/10W
R222	NRVA02D-1502	M.F.RESISTOR	15.0K 1/10W
R223	NRVA02D-5601	M.F.RESISTOR	5.60K 1/10W
R224	NRVA02D-1500	M.F.RESISTOR	150 1/10W
R225	NRSA02J-223	M.G.RESISTOR	22K 1/10W
R226	NRSA02J-223	M.G.RESISTOR	22K 1/10W
C1	NEF11AM-106	TAN.CAPACITOR	10 10V
C2	NEF11AM-156	TAN.CAPACITOR	15 10V
C3	NFV41HJ-222	F CAP	2200P 50V
C4	QEPA1HM-105	E.CAPACITOR	1.0 50V
C5	NCT03CH-471	CER.CAPACITOR	470P 50V
C6	NCT03CH-471	CER.CAPACITOR	470P 50V
C7	QEPA1HM-105	E.CAPACITOR	1.0 50V
C101	QEM41EM-108	E.CAPACITOR	1000 25V
C102	QEHA1AM-108	E.CAPACITOR	1000 10V
C103	QEHA1AM-108	E.CAPACITOR	1000 10V
C104	QEX41AK-226	E.CAPACITOR	22 10V
C105	QEX41AK-226	E.CAPACITOR	22 10V
C106	QEX41AK-226	E.CAPACITOR	22 10V
C107	NEF11VM-104	TAN.CAPACITOR	0.10 35V
C108	QEHA1AM-477	E.CAPACITOR	470 10V
C109	QEHA1AM-477	E.CAPACITOR	470 10V

[PS1]

Symbol No.	Part No.	Part Name	Description
C201	QEM41EM-108	E.CAPACITOR	1000 25V
C202	QEHA1CM-108	E.CAPACITOR	1000 16V
C203	QEHA1CM-108	E.CAPACITOR	1000 16V
C204	QEX41CM-156	E.CAPACITOR	15 16V
C205	QEX41CM-156	E.CAPACITOR	15 16V
C206	QEX41CM-156	E.CAPACITOR	15 16V
C207	NEF11VM-104	TAN.CAPACITOR	0.10 35V
C208	QEHA1AM-477	E.CAPACITOR	470 10V
C209	QEHA1AM-477	E.CAPACITOR	470 10V
L1	SCV0390-025	CHOKE COIL	25μH
L2	SCV1957-001	PEAKING COIL	120μH
L3	SCV0390-025	CHOKE COIL	25μH
L4	SCV1957-001	PEAKING COIL	120μH
L5	SCV0390-025	CHOKE COIL	25μH
CN5	SSV1591-S12	CONNECTOR	12PIN
CN20	SSV1283-002	CONNECTOR	2PIN
CN21	SSV1283-003	CONNECTOR	3PIN
CN22	SSV1283-002	CONNECTOR	2PIN
CP1	ICP-F20	I.C.PROTECTOR	
CP2	ICP-F20	I.C.PROTECTOR	
FC1	SCV1271-003	FUSE CLIP	
FC2	SCV1271-003	FUSE CLIP	

6.21 SW1 BOARD ASSEMBLY LIST 21

SCK2456-05-00A 21☐☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description
D1	MA165	DIODE	MATSUSHITA
C1	QETC1EM-476	E.CAPACITOR	47 25V
S1	SCV1298-001	TOGGLE SWITCH	
	PRD42674	SHIELD PLATE	

6.22 END SENSOR BOARD ASSEMBLY LIST 22

PRK20178A4-04 22☐☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description
Q1	PN268VI-NC	PHOTO TRANSISTO	MATSUSHITA
C1	QCVC1CM-103	CER.CAPACITOR	0.010 16V

6.23 START SENSOR BOARD ASSEMBLY LIST 23

PRK20178A3-03 23☐☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description
Q1	TPS605-VICTR23	PH.TRANSISTOR	
C1	QCVC1CN-103	CER.CAPACITOR	0.010 16V

6.24 SW2 BOARD ASSEMBLY LIST 24

SCK2456-06-00A 24☐☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description
S2	SCV0335-011	TOGGLE SWITCH	POWER ON/OFF
CN22	SSV1209-L02	CONNECTOR	2PIN

6.25 PS2 BOARD ASSEMBLY LIST 25

SCK2463-N0A
SCK2463-P0A

25☐☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description
IC1	NJM79M05FA	I.C.(M)	JRC
Q1	2SK1719	F.E.T.	
Q2	2SK1719	F.E.T.	
D1	MA142WA	DIODE	MATSUSHITA
D2	ERA82-004	DIODE	FUJIELECTRIC
D3	ERA82-004	DIODE	FUJIELECTRIC
D4	ERA82-004	DIODE	FUJIELECTRIC
D5	ERA82-004	DIODE	FUJIELECTRIC
D6	ERA82-004	DIODE	FUJIELECTRIC
D7	ERA82-004	DIODE	FUJIELECTRIC
D8	ERA82-004	DIODE	FUJIELECTRIC
D9	ERA82-004	DIODE	FUJIELECTRIC
R1	NRSA02J-0R0	M.G.RESISTOR	0 1/10W
R2	NRSA02J-0R0	M.G.RESISTOR	0 1/10W
C3	QETA1AM-477	E.CAPACITOR	470 10V
C4	QETA1EM-477	E.CAPACITOR	470 25V
C5	QETA1EM-477	E.CAPACITOR	470 25V
C6	QETA1AM-477	E.CAPACITOR	470 10V
C7	QETA1AM-477	E.CAPACITOR	470 10V
C8	QETA1AM-477	E.CAPACITOR	470 10V
C9	QETA1AM-477	E.CAPACITOR	470 10V
C10	QETA1CM-337	E.CAPACITOR	330 16V
C11	QETA1CM-337	E.CAPACITOR	330 16V
C12	QETA0JM-337	E.CAPACITOR	330 6.3V
L1	SCV0983-500	PEAKING COIL	50μH
L2	SCV0983-500	PEAKING COIL	50μH
L3	SCV0983-500	PEAKING COIL	50μH
L4	SCV0983-500	PEAKING COIL	50μH
L5	SCV0983-500	PEAKING COIL	50μH
CN6	SSV1591-S12	CONNECTOR	12PIN
CP1	ICP-F10	I.C.PROTECTOR	
CP2	ICP-F10	I.C.PROTECTOR	
CP3	ICP-F10	I.C.PROTECTOR	
CP4	ICP-F10	I.C.PROTECTOR	
T1	SCV2033-001	DC-DC TRANSF.	

6.26 VO BOARD ASSEMBLY LIST 26

SCK2456-04-00A

26☐☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description
IC1	MC14577CP	I.C.(M)	MOTOROLA
D1	MA143A	DIODE	MATSUSHITA
R1	NRVA02D-5600	M.F.RESISTOR	560 1/10W
R2	NRVA02D-5600	M.F.RESISTOR	560 1/10W
R3	NRVA02D-1201	M.F.RESISTOR	1.20K 1/10W
R4	NRVA02D-5600	M.F.RESISTOR	560 1/10W
R5	NRVA02D-5600	M.F.RESISTOR	560 1/10W
R6	NRVA02D-1500	M.F.RESISTOR	150 1/10W
R7	NRVA02D-1500	M.F.RESISTOR	150 1/10W
VR1	QVPB609-504	TRIM.RESISTOR	500K
C1	NCT03CH-5R0	CER.CAPACITOR	5.0P 50V
C2	NEF11AM-475	TAN.CAPACITOR	4.7 10V
C3	NEF11AM-475	TAN.CAPACITOR	4.7 10V
C4	NCT03CH-150	CER.CAPACITOR	15P 50V
J6	SCV2701-001	MINI JACK	
CN4	SCV2446-010	FPC CONNECTOR	10PIN

6.27 MT BOARD ASSEMBLY LIST 27

SCK2455-N0A
SCK2455-P0A

27☐☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description
CN1	SCV2681-100	HP CONNECTOR	100PIN
CN2	SCV2681-032	HP CONNECTOR	32PIN
CN3	PGZ01720-30	CONNECTOR	30PIN
CN4	SCV2447-010	CONNECTOR	10PIN
CN5	SSV1591-S12	CONNECTOR	12PIN
CN6	SCV1455-20P	CONNECTOR	20PIN
CN7	SCV1455-20P	CONNECTOR	20PIN
CN8	SCV1455-20P	CONNECTOR	20PIN
CN10	SCV2694-060	CONNECTOR	60PIN
CN11	SCV2446-024	CONNECTOR	24PIN
CN12	SCV2446-024	CONNECTOR	24PIN
CN13	SCV2446-024	CONNECTOR	24PIN
CN14	SSV1591-S07	CONNECTOR	7PIN

6.28 M.IF BOARD ASSEMBLY LIST 28

PRK20178A2-02 28☐☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description
IC1	GP2L09BC	I.C.(M)	SHARP
D1	DA204U	DIODE	ROHM
R1	QRSA08J-680	M.G.RESISTOR	68 1/10W
R2	QRSA08J-471	M.G.RESISTOR	470 1/10W
R3	QRSA08J-471	M.G.RESISTOR	470 1/10W
C1	QEPA1HM-105	E.CAPACITOR	1.0 50V
CN1	PU59973-20	CONNECTOR	20PIN
CN2	YU40095-7	CONNECTOR	7PIN
CN3	YU40095-2	CONNECTOR	2PIN
CN4	YU40095-2R	CONNECTOR	2PIN RED
CN5	YU40095-2B	CONNECTOR	2PIN BLUE
CN6	YU40095-2Y	CONNECTOR	2PIN YELLOW
CN7	YU40095-2B	CONNECTOR	2PIN BLUE
CN8	YU40095-2Y	CONNECTOR	2PIN YELLOW
CN9	YU40095-3R	CONNECTOR	3PIN RED
CN10	YU40095-4	CONNECTOR	4PIN
HD1	YQ30060-1-2	TU.SENS.HOLDER	

6.29 HV BOARD ASSEMBLY LIST 29

SCK2458-01-00A 29☐☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description
Q1	2SK430L	F.E.T.	HITACHI
D1	MA142A	DIODE	MATSUSHITA
D2	HSS82	DIODE	HITACHI
R1	NRSA02J-152	M.G.RESISTOR	1.5K 1/10W
R2	NRSA02J-225	M.G.RESISTOR	2.2M 1/10W
R3	NRSA02J-105	M.G.RESISTOR	1.0M 1/10W
R4	NRSA02J-185	M.G.RESISTOR	1.8M 1/10W
R5	NRSA02J-155	M.G.RESISTOR	1.5M 1/10W
R6	NRSA02J-101	M.G.RESISTOR	100 1/10W
R7	NRSA02J-561	M.G.RESISTOR	560 1/10W
R8	NRSA02J-104	M.G.RESISTOR	100K 1/10W
R9	NRSA02J-274	M.G.RESISTOR	270K 1/10W
VR1	QVAA18B-S13	V.RESISTOR	CONTRAST
VR2	QVAA18B-S15	V.RESISTOR	BRIGHT
VR3	SCV0600-205	TRIM.RESISTOR	FOCUS
VR4	SCV0600-205	TRIM.RESISTOR	SUB BRIGHT
C1	QER41AM-227	E.CAPACITOR	220 10V
C3	QER41HM-225	E.CAPACITOR	2.2 50V
C4	QER41HM-105	E.CAPACITOR	1.0 50V
C5	QER41CM-107	E.CAPACITOR	100 16V
C6	SCV0225-682	MYLAR CAPACITOR	0.0068
C7	QCE13DM-682	CER.CAPACITOR	6800P 2000V
C8	QETA2AM-105	E.CAPACITOR	1.0 100V
C9	QET42CR-474	E.CAPACITOR	0.47 160V
C10	QCE13AM-472	CER.CAPACITOR	4700P 1000V
C11	QEXA1AM-686	E.CAPACITOR	68 10V
L1	SCV0983-500	PEAKING COIL	
L2	SCV1983-001	LINEARITY COIL	H.LIN
S1	QSSIN12-S02	SLIDE SWITCH	
CN1	SCV1227-004	CONNECTOR	4PIN
CN2	SCV1455-12P	CONNECTOR	12PIN
CN3	SCV1978-S06	CONNECTOR	6PIN
CN4	SCV1227-008	CONNECTOR	8PIN
CN5	SSV1591-S02	CONNECTOR	2PIN
CN7	SCV1978-S02	CONNECTOR	2PIN
T1	SCV1958-001	FLYBACK TRANSF.	

6.30 DEF BOARD ASSEMBLY LIST 30
SCK2458-02-00A 30□□□□□□

Symbol No.	Part No.	Part Name	Description
IC1	BA7149F	I.C.(M)	ROHM
Q1	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q2	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q3	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q5	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q6	2SD814A(Q.R)	TRANSISTOR	MATSUSHITA
Q7	2SD814A(Q.R)	TRANSISTOR	MATSUSHITA
Q8	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q9	DTC124EK	TRANSISTOR	ROHM
Q10	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q11	DTC124EK	TRANSISTOR	ROHM
D1	MA142A	DIODE	MATSUSHITA
D2	HSS82	DIODE	HITACHI
D3	MA142A	DIODE	MATSUSHITA
D4	MA142WK	DIODE	MATSUSHITA
R1	NRSA02J-101	M.G.RESISTOR	100 1/10W
R2	NRSA02J-472	M.G.RESISTOR	4.7K 1/10W
R3	NRSA02J-183	M.G.RESISTOR	18K 1/10W
R4	NRSA02J-681	M.G.RESISTOR	680 1/10W
R5	NRSA02J-332	M.G.RESISTOR	3.3K 1/10W
R6	NRSA02J-392	M.G.RESISTOR	3.9K 1/10W
R7	NRSA02J-101	M.G.RESISTOR	100 1/10W
R8	NRSA02J-0R0	M.G.RESISTOR	0 1/10W
R10	NRSA02J-0R0	M.G.RESISTOR	0 1/10W
R11	NRSA02J-102	M.G.RESISTOR	1.0K 1/10W
R13	NRSA02J-102	M.G.RESISTOR	1.0K 1/10W
R15	NRSA02J-102	M.G.RESISTOR	1.0K 1/10W
R16	NRSA02J-102	M.G.RESISTOR	1.0K 1/10W
R17	NRSA02J-392	M.G.RESISTOR	3.9K 1/10W
R18	NRSA02J-392	M.G.RESISTOR	3.9K 1/10W
R19	NRSA02J-470	M.G.RESISTOR	47 1/10W
R20	NRSA02J-0R0	M.G.RESISTOR	0 1/10W
R22	NRSA02J-472	M.G.RESISTOR	4.7K 1/10W
R23	NRSA02J-472	M.G.RESISTOR	4.7K 1/10W
R24	NRSA02J-105	M.G.RESISTOR	1.0M 1/10W
R25	NRSA02J-103	M.G.RESISTOR	10K 1/10W
R26	NRSA02J-222	M.G.RESISTOR	2.2K 1/10W
R27	NRSA02J-222	M.G.RESISTOR	2.2K 1/10W
R28	NRSA02J-104	M.G.RESISTOR	100K 1/10W
R29	NRSA02J-394	M.G.RESISTOR	390K 1/10W
R30	NRSA02J-393	M.G.RESISTOR	39K 1/10W
R31	NRSA02J-471	M.G.RESISTOR	470 1/10W
R32	NRSA02J-471	M.G.RESISTOR	470 1/10W
R33	NRSA02J-0R0	M.G.RESISTOR	0 1/10W
R34	NRSA02J-3R9	M.G.RESISTOR	3.9 1/10W
R35	NRSA02J-103	M.G.RESISTOR	10K 1/10W
R36	NRSA02J-103	M.G.RESISTOR	10K 1/10W
R37	NRSA02J-222	M.G.RESISTOR	2.2K 1/10W
R38	NRSA02J-471	M.G.RESISTOR	470 1/10W
VR3	QVPB612-203	TRIM.RESISTOR	20K, H.HOLD
VR4	QVPB612-101	TRIM.RESISTOR	100,V.HIGHT
VR5	QVPB612-203	TRIM.RESISTOR	20K, V.HOLD

Symbol No.	Part No.	Part Name	Description
C1	QEXA1CM-107	E.CAPACITOR	100 16V
C7	QETA1HM-476	E.CAPACITOR	47 50V
C9	QEPA1HM-225	E.CAPACITOR	2.2 50V
C10	QER41HM-105	E.CAPACITOR	1.0 50V
C11	QFN41HJ-152	MY.CAPACITOR	1500P 50V
C12	NCB21EK-104	CER.CAPACITOR	0.10 25V
C13	QEXA1AM-686	E.CAPACITOR	68 10V
C14	QER41HM-105	E.CAPACITOR	1.0 50V
C15	QEXA1AM-686	E.CAPACITOR	68 10V
C16	QER41HM-105	E.CAPACITOR	1.0 50V
C17	QFB51EJ-104	MYLAR CAPACITOR	0.10 25V
C18	NCB21HK-333	CER.CAPACITOR	0.033 50V
C19	NCB21HK-102	CER.CAPACITOR	1000P 50V
CN1	SCV1456-12S	CONNECTOR	12pin
TP1	SQMX001-001	TEST POINT	
TP2	SQMX001-001	TEST POINT	

6.31 IRIS ZOOM BOARD ASSEMBLY LIST 3 1
338A8001210 3 1 ☐☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description
U1	106K791410	I.C.(M)	JRC NJM4556M
U2	106K791400	I.C.(M)	ROHM BA10324F
U3	106K791400	I.C.(M)	ROHM BA10324F
U4	106K791400	I.C.(M)	ROHM BA10324F
U6	106K799700	I.C.(M)	
Q3	106K799750	TRANSISTOR	2SC2884Y
Q4	106K799750	TRANSISTOR	2SC2884Y
Q5	106K799750	TRANSISTOR	2SC2884Y
Q6	106K799740	TRANSISTOR	2SA1240Y
Q7	106K799740	TRANSISTOR	2SA1240Y
Q8	106K799730	TRANSISTOR	2SC3295
D1	106K970270	ZENER DIODE	HZM2.0NB
D2	106K970270	ZENER DIODE	HZM2.0NB
D3	106K799720	DIODE ARRAY	DA204U
D4	106K799720	DIODE ARRAY	DA204U
D5	106K851120	DIODE	MA112
D6	106K851120	DIODE	MA112
D7	106K851120	DIODE	MA112
R4	117R7561290	RESISTOR	220K 1/10W
R5	117R7561290	RESISTOR	220K 1/10W
R6	117R7561290	RESISTOR	220K 1/10W
R7	117R7561290	RESISTOR	220K 1/10W
R8	117R7561050	RESISTOR	22K 1/10W
R9	117R7561290	RESISTOR	220K 1/10W
R10	117R7560730	RESISTOR	1K 1/10W
R11	117R7561130	RESISTOR	47K 1/10W
R12	117R7561290	RESISTOR	220K 1/10W
R13	117R7561040	RESISTOR	20K 1/10W
R14	117R7561130	RESISTOR	47K 1/10W
R15	117R7440080	RESISTOR	2 1/8W
R16	117R7440080	RESISTOR	2 1/8W
R17	117R7560840	RESISTOR	3K 1/10W
R18	117R7560560	RESISTOR	200 1/10W
R19	117R7440080	RESISTOR	2 1/8W
R20	117R7561050	RESISTOR	22K 1/10W
R21	117R7561050	RESISTOR	22K 1/10W
R22	117R7561290	RESISTOR	220K 1/10W
R23	117R7561290	RESISTOR	220K 1/10W
R24	117R7561040	RESISTOR	20K 1/10W
R25	117R7561210	RESISTOR	100K 1/10W
R26	117R7561210	RESISTOR	100K 1/10W
R28	117R7560710	RESISTOR	820 1/10W
R29	117R7560710	RESISTOR	820 1/10W
R30	117R7570970	RESISTOR	10K 1/10W G
R31	117R7570970	RESISTOR	10K 1/10W G
R32	117R7570970	RESISTOR	10K 1/10W G
R33	117R7570800	RESISTOR	2K 1/10W G
R34	117R7560730	RESISTOR	1K 1/10W
R35	117R7440220	RESISTOR	7.5 1/10W
R36	117R7561040	RESISTOR	20K 1/10W
R37	117R7561040	RESISTOR	20K 1/10W
R38	117R7560840	RESISTOR	3K 1/10W
R39	117R7561410	RESISTOR	680K 1/10W
R40	117R7561110	RESISTOR	39K 1/10W
R41	117R7561130	RESISTOR	47K 1/10W
R42	117R7560730	RESISTOR	1K 1/10W

Symbol No.	Part No.	Part Name	Description
R43	117R7560730	RESISTOR	1K 1/10W
R44	117R7440080	RESISTOR	2 1/8W
R45	117R7440080	RESISTOR	2 1/8W
R46	117R7560840	RESISTOR	3K 1/10W
R47	117R7560560	RESISTOR	200 1/10W
R48	117R7440080	RESISTOR	2 1/8W
R49	117R7561050	RESISTOR	22K 1/10W
R50	117R7561050	RESISTOR	22K 1/10W
R51	117R7561290	RESISTOR	220K 1/10W
R52	117R7561290	RESISTOR	220K 1/10W
R57	117R7560000	RESISTOR	0 1/10W
R58	117R7560000	RESISTOR	0 1/10W
R59	117R7560000	RESISTOR	0 1/10W
R63	117R7560000	RESISTOR	0 1/10W
R66	117R7561210	RESISTOR	100K 1/10W
R72	117R7560000	RESISTOR	0 1/10W
R77	117R7561210	RESISTOR	100K 1/10W
RV1	117R7340250	TRIM.RESISTOR	500K IRIS SENS.
RV2	117R7340200	TRIM.RESISTOR	10K IRIS POSI.
RV3	117R7340200	TRIM.RESISTOR	10K IRIS POSI.
RV4	117R7540170	TRIM.RESISTOR	50K IRIS SPEED
RV5	117R7540170	TRIM.RESISTOR	50K ZOOM SPEED
C1	116K854880	E.CAPACITOR	10 16V
C2	116K854880	E.CAPACITOR	10 16V
C3	116K970230	CER.CAPACITOR	1 25V
C4	116K970230	CER.CAPACITOR	1 25V
C5	116K970240	CER.CAPACITOR	0.1 25V
C6	116K970250	CER.CAPACITOR	0.01 50V
C7	116K970240	CER.CAPACITOR	0.1 25V
C8	116K970250	CER.CAPACITOR	0.01 50V
C9	116K970250	CER.CAPACITOR	0.01 50V
C10	116K970250	CER.CAPACITOR	0.01 50V
C11	116K970250	CER.CAPACITOR	0.01 50V
C13	116K970240	CER.CAPACITOR	0.1 25V
C15	116K970250	CER.CAPACITOR	0.01 50V
C16	116K970250	CER.CAPACITOR	0.01 50V
K1	120K467300	RELAY	OKI RRD51A12D
SW1	121K794110	TACT SWITCH	ALPS SKHHLU
J001	113K794220	CONNECTOR	
J002	113K799810	CONNECTOR	
J003	113K799770	CONNECTOR	
J004	113K799790	CONNECTOR	
J006-2	113K799770	CONNECTOR	
J007	113K586220	CONNECTOR	
J008	113K586220	CONNECTOR	
J009	113K586220	CONNECTOR	
J010	113K586220	CONNECTOR	
J011	113K799800	CONNECTOR	

6.32 UPPER DRUM BOARD ASSEMBLY LIST 32
PRK30120A 32□□□□□□

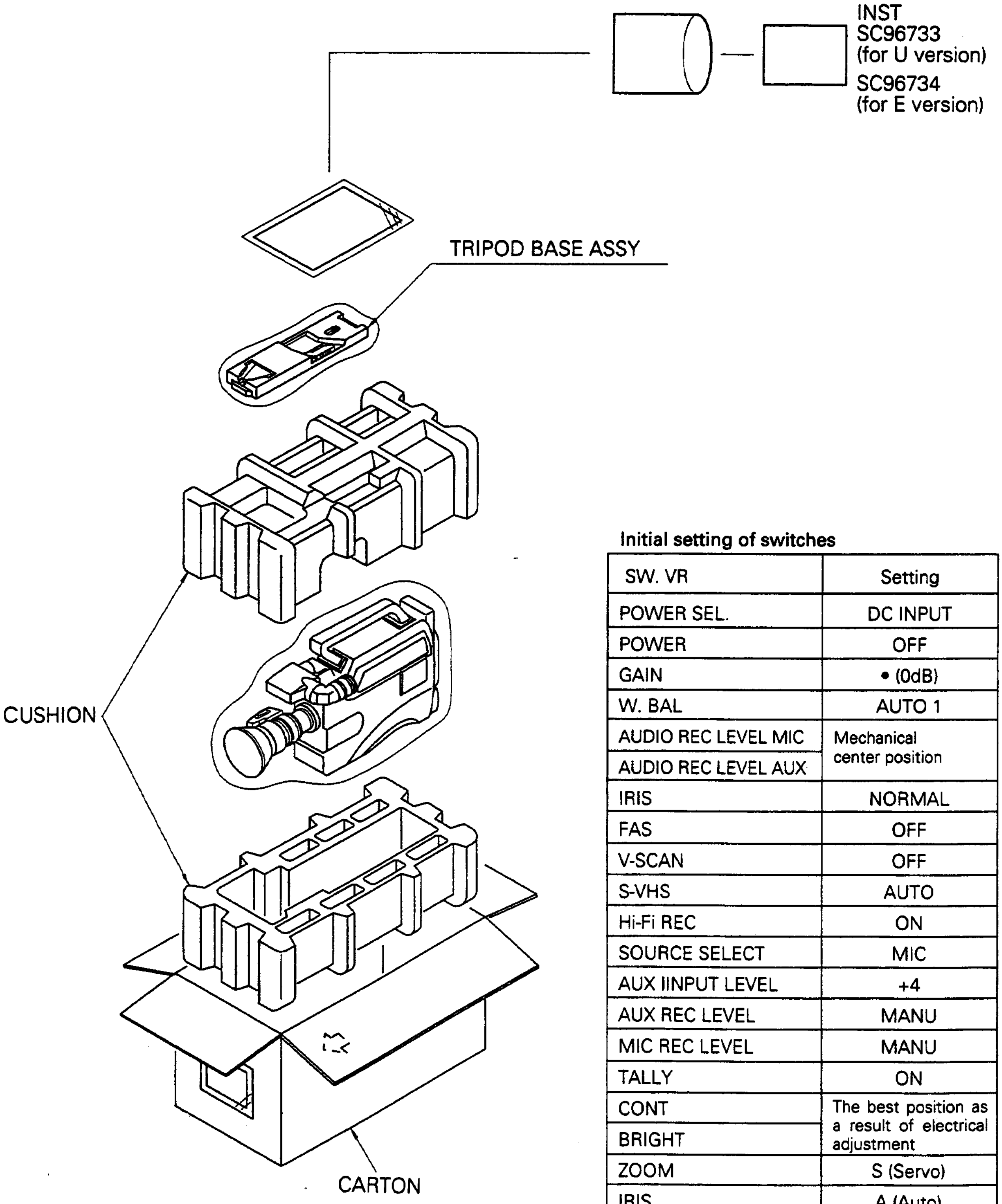
Symbol No.	Part No.	Part Name	Description
	PRK30120-01-01	PRINTED BOARD	(E)
	PRK30120A	UPPER D.PWB ASY	(U)
	PRK30120A	UPPER D.PWB ASY	(U)
	PRK30120A	UPPER D.PWB ASY	(U)

6.33 MIC JACK BOARD ASSEMBLY LIST 33
SCK2456-09-00A 33□□□□□□

Symbol No.	Part No.	Part Name	Description
J4	PGZ01750	JACK	ϕ3.5
CN26	SCV1978-S03	CONNECTOR	3PIN

SECTION 7
PACKING EXPLODED VIEW AND PARTS LIST

7.1 PACKING ASSEMBLY MA


INST
SC96733
(for U version)
SC96734
(for E version)
TRIPOD BASE ASSY
CUSHION
CARTON

Initial setting of switches

SW. VR	Setting
POWER SEL.	DC INPUT
POWER	OFF
GAIN	• (0dB)
W. BAL	AUTO 1
AUDIO REC LEVEL MIC	Mechanical center position
AUDIO REC LEVEL AUX	
IRIS	NORMAL
FAS	OFF
V-SCAN	OFF
S-VHS	AUTO
Hi-Fi REC	ON
SOURCE SELECT	MIC
AUX IINPUT LEVEL	+4
AUX REC LEVEL	MANU
MIC REC LEVEL	MANU
TALLY	ON
CONT	The best position as a result of electrical adjustment
BRIGHT	
ZOOM	S (Servo)
IRIS	A (Auto)
FILTER	1 (3200K)

SECTION 8
CIRCUIT DESCRIPTION

8.1 IS (B, G, R) CIRCUIT BOARD

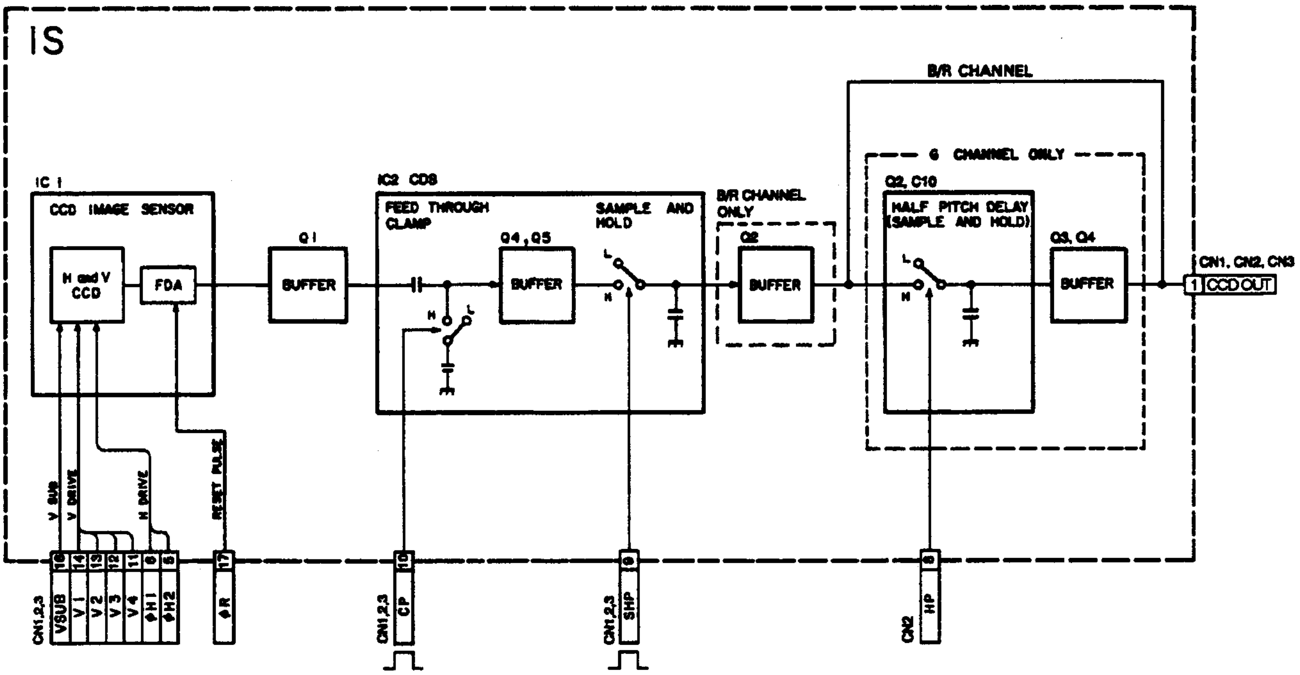

IS
IC 1
CCD IMAGE SENSOR
H and V CCD
FDA
Q1
BUFFER
IC2 CDS
FEED THROUGH CLAMP
Q4, Q5
BUFFER
SAMPLE AND HOLD
L
H
B/R CHANNEL ONLY
Q2
BUFFER
B/R CHANNEL
G CHANNEL ONLY
Q2, C10
HALF PITCH DELAY (SAMPLE AND HOLD)
Q3, Q4
BUFFER
CN1, CN2, CN3
1 CCD OUT
V SUB
V DRIVE
H DRIVE
RESET PULSE
16
14
13
12
11
6
5
17
10
9
8
CN1,2,3
VSUB
V1
V2
V3
V4
ϕH1
ϕH2
ϕR
CP
SHP
CN2
HP

Fig. 8-1-1 IS (B, G, R) BOARD BLOCK DIAGRAM

The IS (B, G, R) circuit board consists of the image sensor and the CDS (Correlated Double Sampling) circuits. The G channel contains a delay circuit that sets the timing for the half-pitched pixel offset (half-pitched spatial offset).

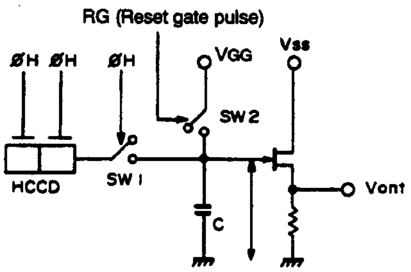
IC1 is the CCD image sensor. V1-V4 are the input terminals for the vertical transfer drive pulse and H1 and H2 are the input terminals for the horizontal transfer drive pulse. ϕR is the input terminal for the reset pulse to the image sensor in the FDA (Floating Diffusion Amplifier) of the image sensor.

The video signal is output from the video output terminal through Q1 (Buffer) to IC2.

IC2 is the IC of the CDS circuit and it performs the sample and hold operations for the noncontinuous signals output from the image sensor. The video signal is output from pin 1 of CN2 from the ISG circuit board to the PR1 circuit board.

8.1.1 CDS Circuit

The FDA is the CCD image sensor signal detection amplifier. The FDA operation accumulates electrons in the capacitor used to detect the electrons those are sent from the horizontal drive CCD. The voltage that is generated on both sides of this capacitor is output externally for the signal. It is first necessary to set the electrons to a fixed quantity in this capacitor before accumulating the electrons from the horizontal drive CCD. Each time the signal electron for one pixel from the CCD is accumulated, it is applied to the reset pulse in the capacitor that is used to detect the electrons and the fixed reset voltage is accumulated in the capacitor. As a result, the output signal waveform from the FDA is superimposed intermittently by the reset pulse.



Floating Diffusion Amp.

Fig. 8-1-2(a)

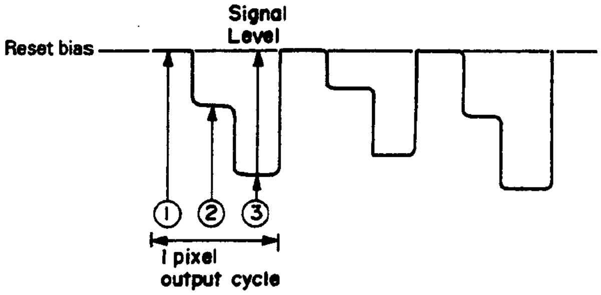


Fig. 8-1-2(b)

Figure 8-1-2 (a) shows the FDA equivalent circuit and Figure 8-1-2 (b) shows the signal waveform output from the FDA. Their operations will be explained in order.

(1) SW2 applies the reset bias to capacitor C by the reset gate pulse that is applied to the RG terminal and the capacitor C is charged to the voltage of the VGG. The output signal waveform is the timing ① shown in Figure 8-1-2 (b).

(2) If SW2 is set OFF, capacitor C is set to the floating condition. The output signal waveform is the timing ②.

(3) The electron for one pixel is accumulated in capacitor C by the horizontal drive CCD according to the horizontal drive pulse. The voltage at both ends of capacitor C is discharged by the electrons. This output signal is timing ③.

The reset gate pulse is added again and the electron detection capacitor C is charged in the reset voltage VGG.

This series of operations is performed each time an electron for one pixel is detected. The electron detection capacitor in the FDA is the signal level that is always charged in the reset potential VGG at every signal electron detection. This is the difference of the potential of the capacitor when the reset was performed and the potential after the signal electrons are applied.

However, even if the reset is actually performed, the electrons inside the capacitor cannot be reset to a fixed condition. Figure 8-1-3 shows the potential of the electron detection capacitor C when it is applied to the FDA.

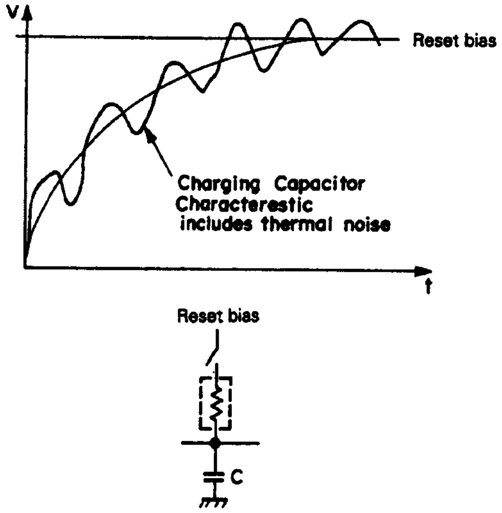


Fig. 8-1-3

Ideally, the potential increases exponentially and is achieved at the reset voltage potential. However, it is actually generated by the resistance component included in the path to the capacitor. The potential rises as it varies due to the thermal noise that is also called random noise.

Consequently, even after a reset is performed, the electron detection capacitor is not in a fixed condition and a condition which includes its variants occurs. Even if a fixed quantity of electrons is accumulated in the electron detection capacitor from the horizontal drive CCD, the detection output voltage output from the FDA is not fixed. This is called reset noise, the noise that is generated in the CCD image sensor is a much greater cause of noise. The CDS circuit is a circuit that is highly effective in eliminating reset noise.

As previously described, even after the electron quantity of the electron detection capacitor C of the FDA has been reset, this quantity is not fixed and conditions which include reset noise also occur. The signal level of the period of time that the capacitor attains a floating condition after the reset, which is the period of the feed-through (Figure 8-1-2 (b) timing ②), and increases or decreases to a certain degree due to the high and low reset noise level. In other words, it is possible to eliminate the reset noise for the timing ② and ③ of Figure 8-1-2 (b) if the level difference of ② and ③ is the signal level because the same quantity of reset noise is considered to be included.

The feed-through period ② is clamped and if the video signal components ③ are sampled and held using this as a reference, the reset noise which has the correlativity for the feed-through component and video signal component is eliminated and continuous output of only the video signal is possible. This is the relative double sampling method.

The internal block and operation of IC2 in the CDS circuit IC is shown below.

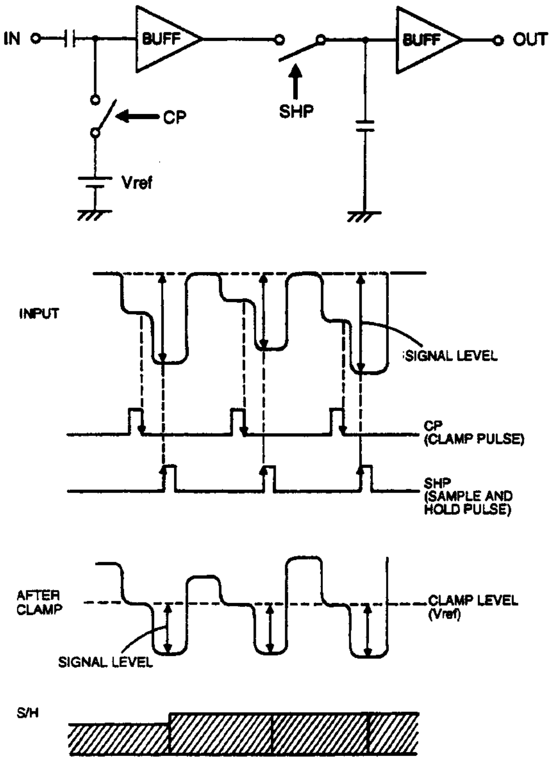

IN
BUFF
BUFF
OUT
CP
SHP
Vref
INPUT
SIGNAL LEVEL
CP (CLAMP PULSE)
SHP (SAMPLE AND HOLD PULSE)
AFTER CLAMP
CLAMP LEVEL (Vref)
SIGNAL LEVEL
S/H

Fig. 8-1-4 CDS Circuit

For non-continuous video signals that include the reset noise input to the input terminal, the feed-through level is held in the internal reference voltage Vref by the clamp pulse (CP) that is applied at the SHP terminal. The video component is sampled and held by the sampling pulse (SHP) that is applied to the SHD terminal until the next sampling pulse is input. This enables the reset noise to be eliminated together with continuous conversion to the video signal.

8.1.2 Half-pitched Pixel Offset (G channel only)

The RGB output signals in a 3-CCD camera are output successively from one frame in each CCD. However, if the spatial sampling points of the R and B channels are between the points of the G channel sampling, the sampling points for the video image are doubled for the 3-CCD coincidence format.

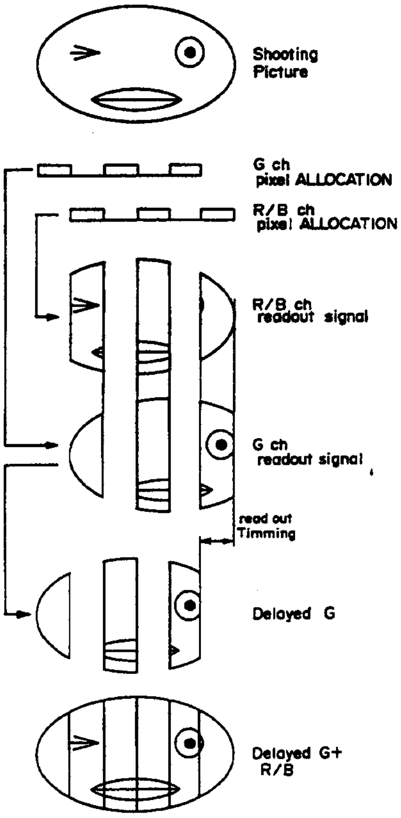

Shooting Picture
G ch pixel ALLOCATION
R/B ch pixel ALLOCATION
R/B ch readout signal
G ch readout signal
read out Timming
Delayed G
Delayed G+ R/B

Fig. 8-1-5 Half-pitched pixel offset

In order to realize this condition, the image sensor of the G channel is shifted by half a pitch of the pixel interval in the horizontal direction from the image sensor of the B and R channel of the image sensor. The video signal that is output by the image sensor of the G channel must be delayed by half a pitch of the pixel interval by the horizontal timing from the B and R channel output signal to become the correct video signal.

This unit samples and holds the G channel signal by a pulse that is delayed half a cycle by the sampling pulse that is applied to the image sensor. This delays the G channel signal by half a pitch (approx. 26 nsec) of the horizontal pixel (Figure 8-1-6).

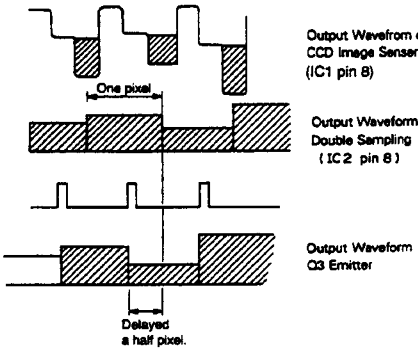

Output Wavefrom of CCD Image Senser (IC1 pin 8)
One pixel
Output Waveform of Double Sampling (IC2 pin 8)
Output Waveform Q3 Emitter
Delayed a half pixel.

Fig. 8-1-6

8.2 DR CIRCUIT BOARD

The DR circuit board contains the following circuits.

- Timing generator
- Horizontal drive circuit
- Vertical drive circuit
- Pre-amplifier circuit

8.2.1 Timing Generator

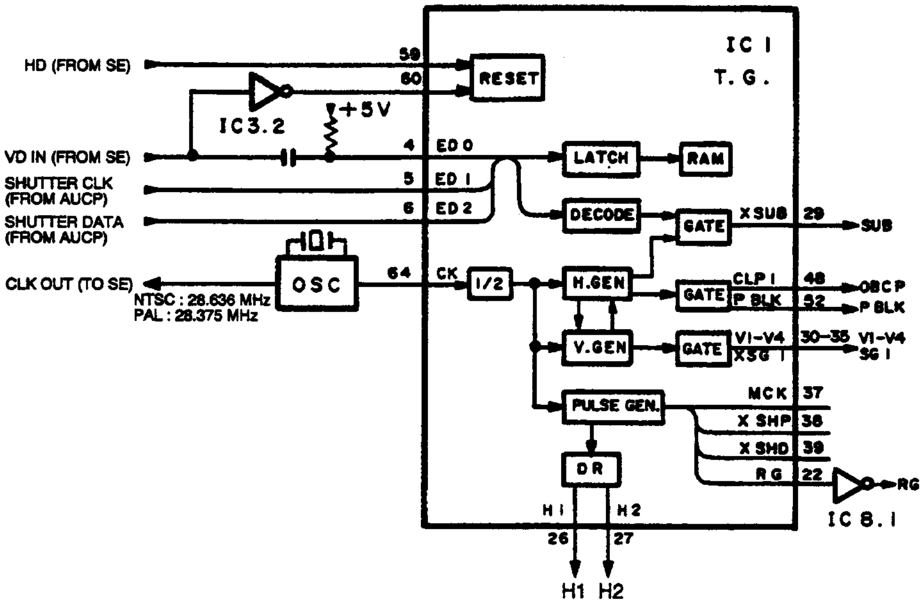

HD (FROM SE)
VD IN (FROM SE)
SHUTTER CLK (FROM AUCP)
SHUTTER DATA (FROM AUCP)
CLK OUT (TO SE)
NTSC : 28.636 MHz
PAL : 28.375 MHz
IC3.2
+5V
OSC
IC 1
T.G.
59
60
RESET
4
ED 0
5
ED 1
6
ED 2
64
CK
1/2
LATCH
RAM
DECODE
GATE
XSUB
29
SUB
H.GEN
GATE
CLP I
48
OBCP
P BLK
52
P BLK
V.GEN
GATE
VI-V4
XSG I
30-35
VI-V4
SG I
PULSE GEN.
MCK
37
X SHP
38
X SHD
39
RG
22
RG
IC 8.1
DR
H I
H 2
26
27
H1
H2

Fig. 8-2-1 Timing Generator Circuit

IC1 is the timing generator IC. The master clock generates a frequency of 28.636 MHz(NTSC)/28.375 MHz(PAL) at X1. This master clock is supplied to the SE board, too. A countdown is performed on the SE circuit board for the basic clock of the 4fsc and a synchronized signal is generated. A countdown is performed for the basic clock in IC1 and the pulse is generated that is required to activate the image sensor. The sub-pulse used for the electrical shutter is generated from the SHUTTER CLK and SHUTTER DATA signals on the AUCP circuit board and from the VD signal on the SE circuit board.

8.2.2 Horizontal Drive Circuit

IC1 is the circuit that generates the H1 and H2 pulses which are output to the ISB, ISG and ISR circuit boards. The H1 (pin 26) and H2 (pin 27) pulses (generally approx 9.5 MHz) output to each circuit board are directly input to the CCD by each IS circuit board. The reset pulse generated at IC1 is output to the IS circuit board by the complimentary single-ended push-pull circuit (complementary SEPP). (level shift [5 Vp-p to 9 Vp-p] and waveform shaping)

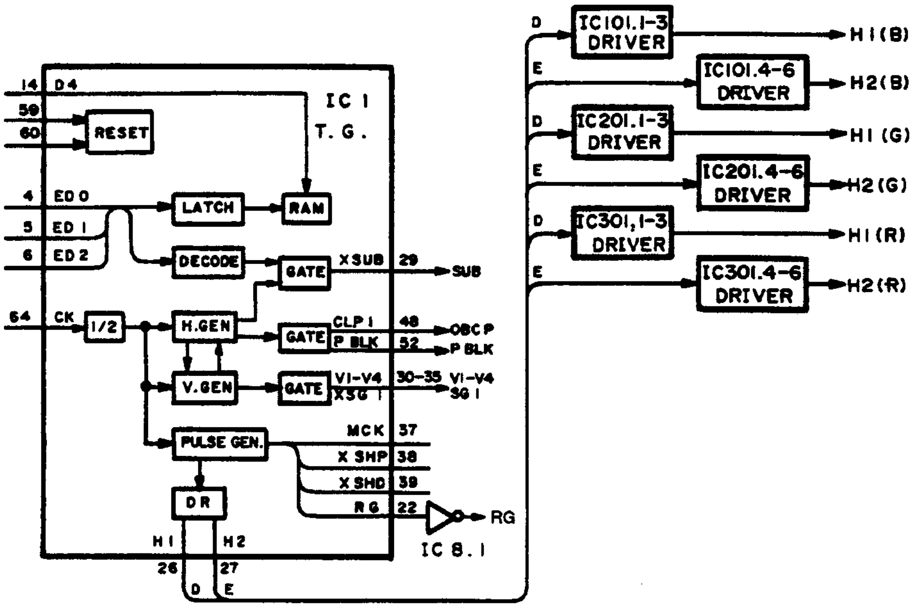

14
D4
59
60
RESET
IC 1
T.G.
4
ED 0
5
ED 1
6
ED 2
LATCH
RAM
DECODE
GATE
XSUB
29
SUB
64
CK
1/2
H.GEN
GATE
CLP I
48
OBCP
P BLK
52
P BLK
V.GEN
GATE
VI-V4
XSG I
30-35
VI-V4
SG I
PULSE GEN.
MCK
37
X SHP
38
X SHD
39
RG
22
RG
IC 8.1
DR
H I
H 2
26
27
D
E
D
IC101.1-3 DRIVER
H I (B)
E
IC101.4-6 DRIVER
H2 (B)
D
IC201.1-3 DRIVER
H I (G)
E
IC201.4-6 DRIVER
H2 (G)
D
IC301,1-3 DRIVER
H I (R)
E
IC301.4-6 DRIVER
H2 (R)

Fig. 8-2-2 Horizontal Drive Circuit

8.2.3 Vertical Drive Circuit

This section explains the G channel which has the same circuit configuration which is used in all three channels.
The vertical drive signals output from IC1 pin 30 – pin 35 are input to IC202. The trilevel pulses used for the CCD drive are formed from the V1-V4 pulses and the SG pulses.

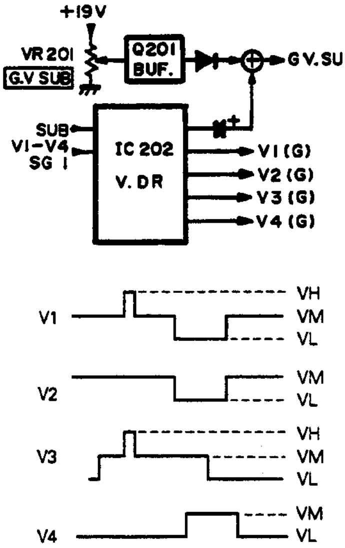

+19V
VR201
G.V SUB
Q201
BUF.
G V.SUB
SUB
V1-V4
SG I
IC 202
V. DR
V1 (G)
V2 (G)
V3 (G)
V4 (G)
V1
V2
V3
V4
VH
VM
VL

Fig. 8-2-3 Vertical Drive Circuit

The SG pulse is superimposed on the V1 and V3 pulses as shown in Figure 8-2-4. These pulses are sent to each IS circuit board and are input directly to the CCD.

8.2.4 Pre-amplifier Circuit

This section explains the G channel is the same circuit configuration as the other channels.

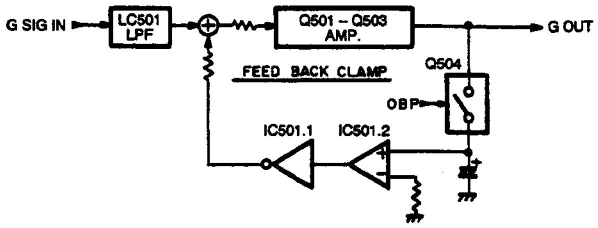

G SIG IN
LC501
LPF
Q501 – Q503
AMP.
G OUT
FEED BACK CLAMP
Q504
OBP
IC501.1
IC501.2

Fig. 8-2-5 Pre-amplifier Circuit

The signal components in the video signal from the IS circuit board above approximately 6 MHz are first eliminated by the low-pass filter LC501. This low-pass filter removes CLOCK frequency of the CCD (equivalent to the sampling pulse of the CDS circuit) from video signal. This is amplified to approximately 0.65 Vp-p by the amplifier configuration of Q505-Q503. The gain of the amplifier in each channel is the same. The B channel output is approximately 0.3 Vp-p and the output of the R channel is approximately 0.7 Vp-p. The video signal of the optical block of the CCD at Q504 is fed back at the feedback clamp circuit to produce a stabilized black level of the video signal.

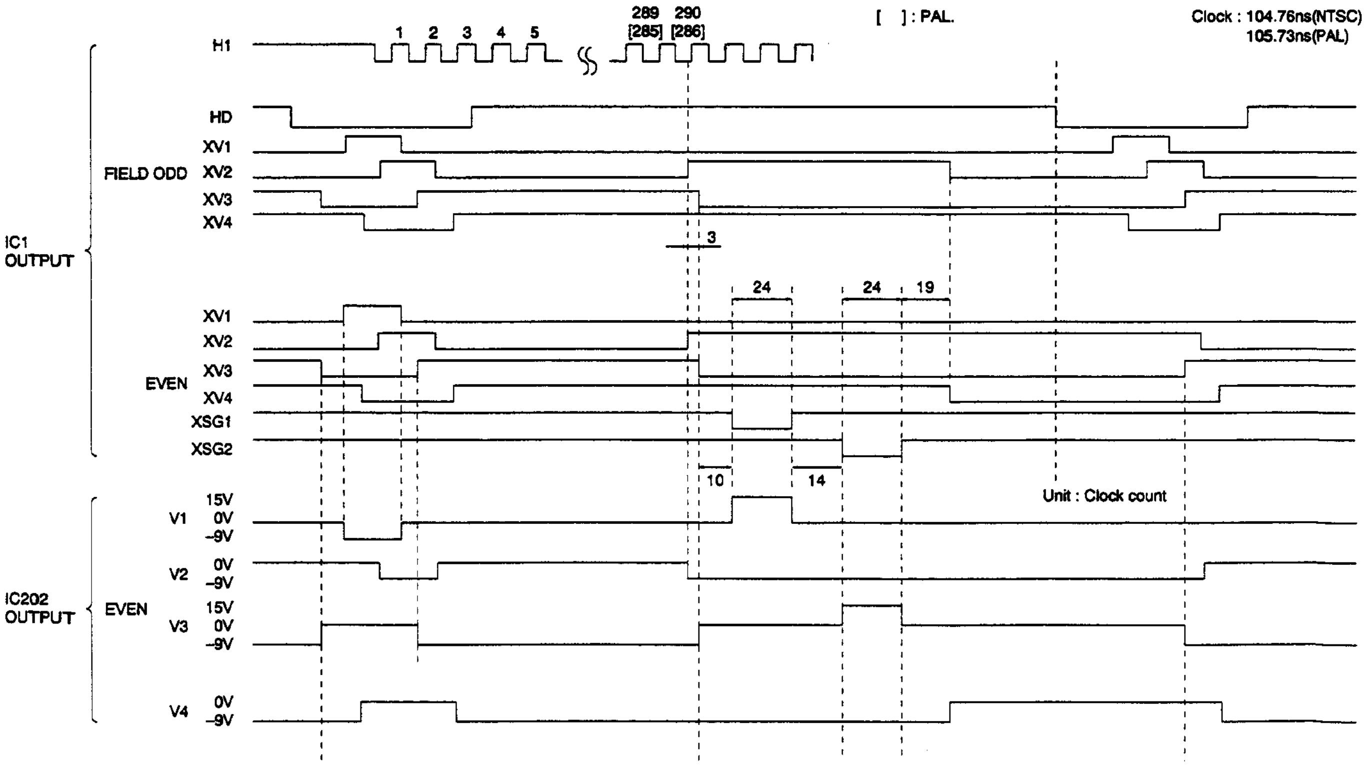

[ ] : PAL.
Clock : 104.76ns(NTSC)
105.73ns(PAL)
H1
1 2 3 4 5
289 290
[285] [286]
HD
XV1
XV2
XV3
XV4
FIELD ODD
IC1
OUTPUT
3
24
24
19
EVEN
XSG1
XSG2
10
14
Unit : Clock count
IC202
OUTPUT
EVEN
V1
V2
V3
V4
15V
0V
-9V

Fig. 8-2-4 Vertical Drive Pulse

8.3 PR1 CIRCUIT BOARD

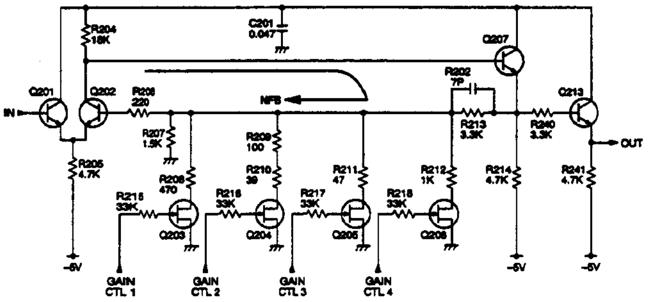
The PR1 circuit board contains the following circuits.

- Gain (0 dB to 18dB) control
- White balance adjustment
- Black level control
- Flare correction

This section explains the G channel.
The signal output for the ISG circuit board is input to Pin 6 of CN4 on the PR1 circuit board.

8.3.1 Gain Control

The differential amplifier circuit consisting of Q201 and Q202 is stabilized by the negative feed-back (NFB) and the signal is amplified. The resistor value of the feed-back circuit is modified by the pulse of the gain of CTL1-CTL4. Each FET in Q203-Q206 is set ON when the GAIN CTL pulse goes high and the gain of the differential amplifier circuit becomes large. The relationship of the gain value and the pulse of the GAIN CTL1-CTL4 is shown in Figure 8-3-1.


R204
18K
C201
0.047
Q207
R202
7P
Q201
Q202
R206
220
NFB
Q213
IN
R207
1.5K
R209
100
R213
3.3K
R240
3.3K
OUT
R205
4.7K
R208
470
R210
39
R211
47
R212
1K
R214
4.7K
R241
4.7K
R215
33K
R216
33K
R217
33K
R218
33K
Q203
Q204
Q205
Q206
-5V
-5V
-5V
GAIN
CTL 1
GAIN
CTL 2
GAIN
CTL 3
GAIN
CTL 4

GAIN	CTL 1	CTL 2	CTL 3	CTL 4
0 dB	L	L	L	L
6 dB	L	L	L	H
9 dB	H	L	L	L
12 dB	H	L	L	H
18 dB	H	H	L	L
MAX GAIN	H	H	H	L

Fig. 8-3-1 Gain Control Circuit

8.3.2 White Balance Adjustment

The 3-CCD camera is set so the output video color is white when the amplification of the RGB signals is equal for the video process when a white subject is shot. Consequently, the signal amplification of each channel must conform before they are supplied to the video process circuit in order to output a white subject as a white color. The white balance adjustment uses the G channel and change the B and R channel signal amplitude to match the amplitude of the G channel.

This section explains how the B channel operates.

The video signal output from Q107 is input to Pin 3 of IC101 through Q111. IC101 is the gain control IC. The B GAIN CTL signal (0 to 5V) output from the AUCP circuit board is input to Pin 10 of IC101.

The gain of the B channel video signal is modified so the full-time auto white balance is obtained during the automatic white balance (including full-time auto white).

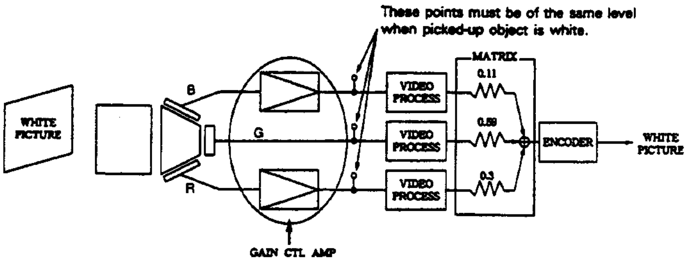

These points must be of the same level when picked-up object is white.
MATRIX
0.11
0.59
0.3
WHITE PICTURE
B
G
R
VIDEO PROCESS
VIDEO PROCESS
VIDEO PROCESS
ENCODER
WHITE PICTURE
GAIN CTL AMP

Fig. 8-3-2

The amplification of the video signal that passes through the video process circuit is detected by the CPU and if it differs, it is modified so the amplification gain of IC101 is equalized in each channel. (Refer to the article "(8) Automatic white balance control" of the section 8.9.2.)

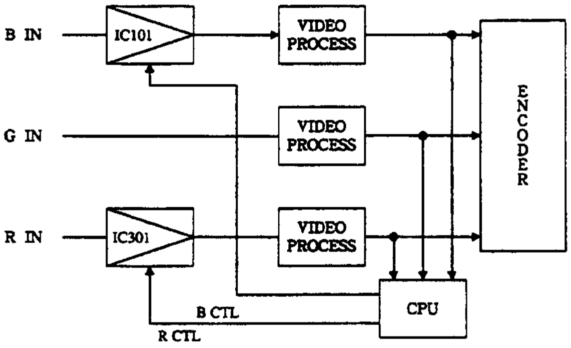

B IN
IC101
VIDEO PROCESS
G IN
VIDEO PROCESS
R IN
IC301
VIDEO PROCESS
ENCODER
CPU
B CTL
R CTL

Fig. 8-3-3

8.3.3 Black Level Control

The video camera performs various non-linear waveform processing such as gamma correction and knee control. However, it is necessary to fix the DC level (black level) as the reference for the video signal in advance in order to perform these operations.

A CCD image sensor contains a function called optical black that performs a black masking of the screen. This black level is fixed at the standard voltage for the black level.

The signal amplified at Q216 and Q217 passes through Q219 (buffer). The OBCP (Optical Black Clamp Pulse) is supplied to the gate of Q218 in the optical black period of the video signal and the electrons of the optical black component of the video signal in the period when Q218 goes ON are charged in C219. This charge voltage is input to Pin2 of IC5 and the reference voltage determined by the BLACK LEVEL VR (VR1) is input to Pin 3. Two input signals are compared at IC5.1, then output from Pin 1 as the DC voltage and charged in C212. The video signal is held by the CP pulse (Clamp Pulse) timing of Q214 but the clamp voltage is modified by the voltage charged in C212 and the black level of the video signal is fixed according to this result.

8.3.4 Flare Correction

Flare is a phenomenon which occur when the black level of the video signal rises due to the irregular reflection of the light introduced to the lens and CCD image sensor.

In the CCD camera, the flare occurs most easily in the B channel and with the most difficulty in the R channel.

The R, G, B FLARE trimming resistors (VR102-VR302) prevents the black level in each channel from being modified irregularly and adjusts the level to attenuate the flare in the video signal so the amplification of these video signals conforms.

This section explains the G channel.

The video signal from VR202 is input to IC5 and modified to the DC voltage that is integrated. Its output is connected to the black level control circuit described in the previous item and decreased to the black level when the video signal increases.

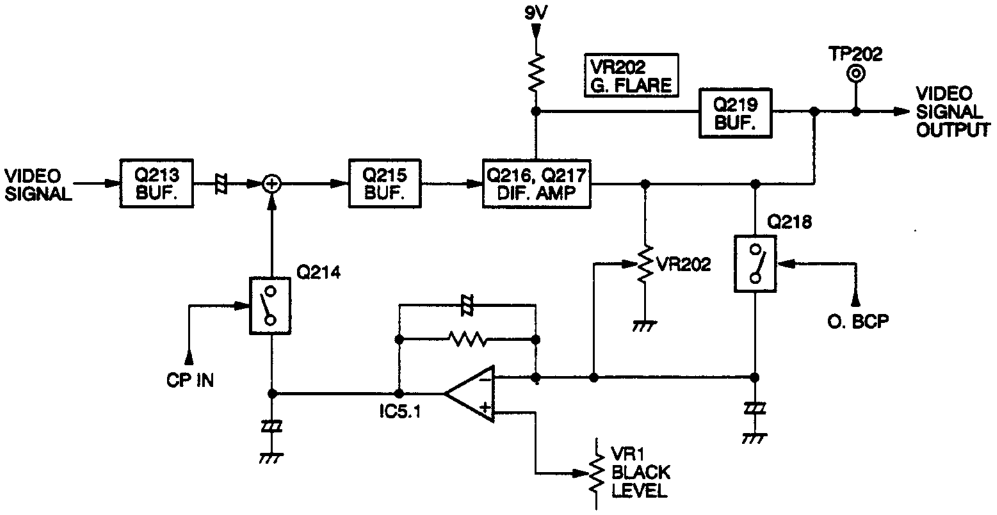


Fig. 8-3-4 Black Level and Flare Correction Circuit

8.4 PR2 CIRCUIT BOARD

The PR2 circuit board contains the following circuits.

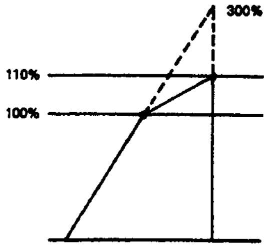
- Knee circuit
- Gamma correction circuit
- Output gain adjustment circuit
- White clip circuit
- Black slice circuit
- Contour correction mix circuit

This section explains the operation of the G channel.
The video signal output from the PR1 circuit board is input to Pin 8 of CN7 on the PR2 circuit board and then the blanking is performed at IC1.2.

8.4.1 Knee Circuit

The video camera output level is limited the output level that is input to units such as the video monitor, VTR, switcher and other components to a maximum of 110 IRE (0.785 Vp-p) for NTSC and 110% (0.77 Vp-p) for PAL. There is a white clip circuit in the video camera that clips signal levels which exceed 110 (IRE or %).

However, this circuit produces an abnormal image in order to clip all signal components which exceed a video level of 110 (IRE or %). The knee circuit is designed to prevent the output image from becoming abnormal. The knee circuit compresses signal levels between 100 and 300 (IRE or %) to 10 (IRE or %) and controls 300 (IRE or %) signals to 110 (IRE or %). Gradation modifications in signals up to 300 (IRE or %) can remain for this reason.



Signal waveform through the knee circuit

Fig. 8-4-1

The G channel operations are explained in this section.
If the emitter potential of Q201 exceeds a certain level (100 IRE or %), Q203 goes ON and current flows through R202 and R203 to control the voltage increase.
Moreover, impedance of high frequency (edge portion) is heightened in order to emphasize the contour of highlight part of a scene. The higher the frepuency of a coil is, the more the impedance is heightened, therefore, L201 is connected with R203 in parallel. The knee point (the compression start point) is determined by the base voltage of Q203 determined by the KNEE VR (VR1).

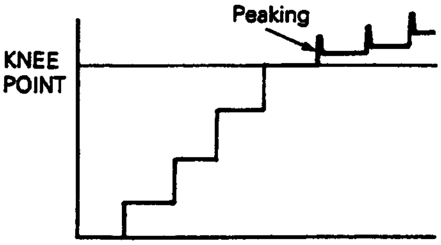

Peaking
KNEE POINT

Fig. 8-4-3

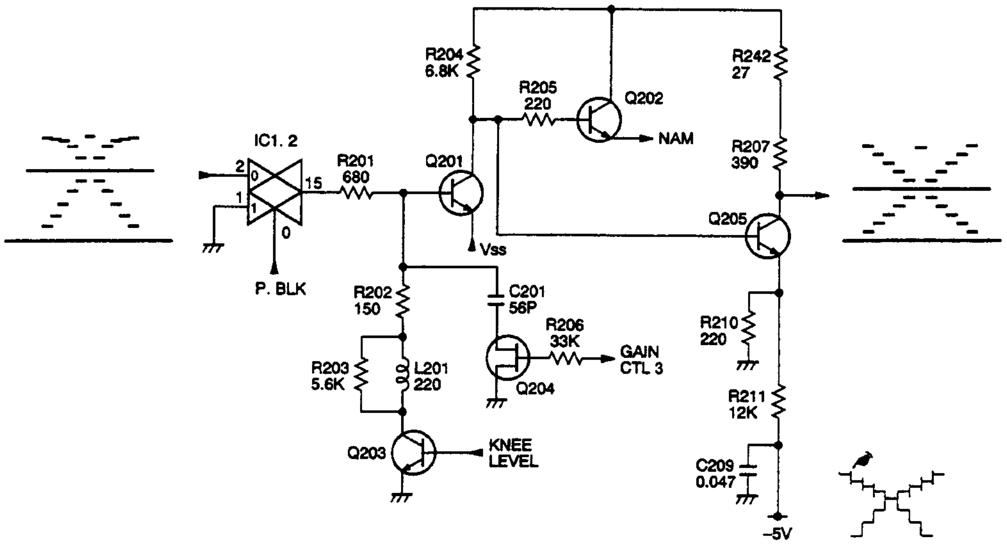

IC1. 2
2
0
1
1
15
0
P. BLK
R201
680
R204
6.8K
R205
220
Q202
NAM
Q201
Vss
R202
150
R203
5.6K
L201
220
C201
56P
R206
33K
GAIN CTL 3
Q204
Q203
KNEE LEVEL
R242
27
R207
390
Q205
R210
220
R211
12K
C209
0.047
-5V

Fig. 8-4-2 Knee Circuit

8.4.2 Gamma Correction

The luminescent output characteristic of the CRT of a TELEVISION monitor is not proportional to the input signal and has the relationship expressed by the following exponential function.

$Y = E^{2.2}$ (Y: luminescent brightness, E: input signal amplitude)

In this case, Gamma = 2.2.
The camera output signal must be amplified in the following non-linear waveform to correct this characteristic.

$Y=E^{0.45}$

In other words, the non-linear waveform amplification is performed so Gamma=0.45 for the video signal. This is called gamma correction.

Q205 outputs the video signal input to the base that is amplified from the collector. The DC impedance of D201 is set proportionally to the video signal level output from the collector Q205 and modified to a non-linear waveform in order to use the non-linear area component of the voltage and current characteristics. Non-linear amplification is performed to the signal output from the Q208 emitter to produce the signal that is applied for the gamma correction. Linear amplification is performed to the signal output from the Q207 emitter and a signal with a value of Gamma=1 is produced. This signal is mixed by the G. GAMMA trimming resistor (VR201) and are output from the gamma circuit as a signal with a value of Gamma=0.45 by adjusting the trimming resistor. The video signal that passes through the gamma video circuit is amplified in Q209 and Q210 (output gain circuits).

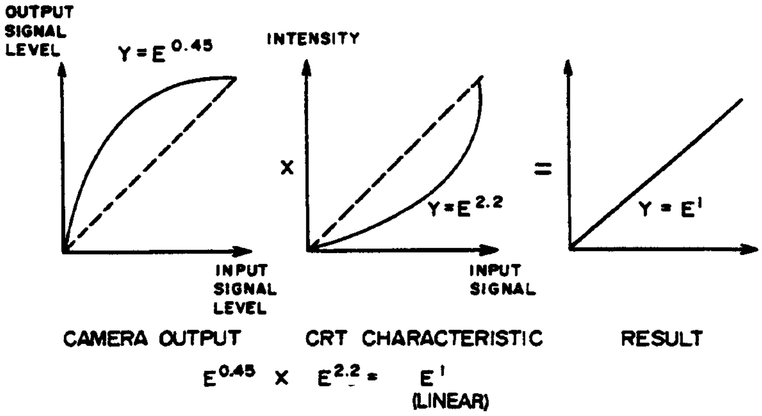


Fig. 8-4-4 Gamma Correction

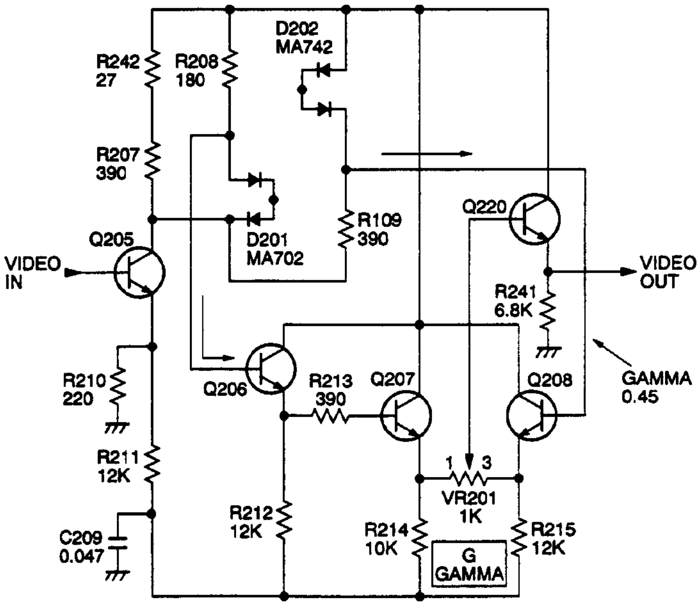

R242 27
R208 180
D202 MA742
R207 390
D201 MA702
R109 390
Q205
Q220
VIDEO IN
VIDEO OUT
R241 6.8K
GAMMA 0.45
R210 220
Q206
R213 390
Q207
Q208
1 3
VR201 1K
R211 12K
R212 12K
R214 10K
R215 12K
C209 0.047
G GAMMA

Fig. 8-4-5 Gamma Correction Circuit

8.4.3 White clip

The peak value of the video output of the camera is limited to 110 (IRE or %) to prevent malfunctions in the operation of the peripheral equipment. The white clip circuit performs this function. When the video signal output to the Q215 emitter exceeds the Q216 emitter voltage, Q216 operates and the signal cannot pass through Q215.

The clipping level of the white clip circuit can be adjusted by changing the base voltage of Q216 with the WHITE CLIP trimming resistor (VR2), which resulingly changes the camera blanking DC voltage with change of the base voltage of Q216.

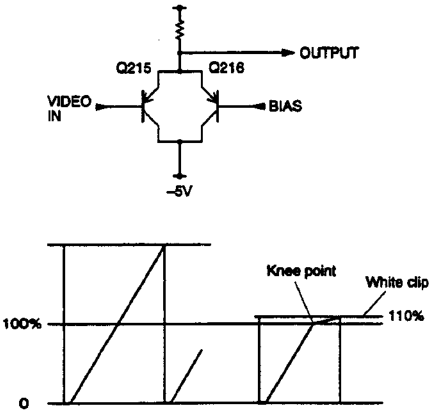


Fig. 8-4-6 White Clip Circuit

8.4.4 Black Slice

After video signals have passed through the contour circuit they contain negative signals and noise centered in the DC (black level). The video signal and the synchronization signal cannot be differentiated if the signal is output like this and the synchronization of the connected equipment becomes unstable. As a result, the signals which are lower than the pedestal level are not output by the black slice circuit.

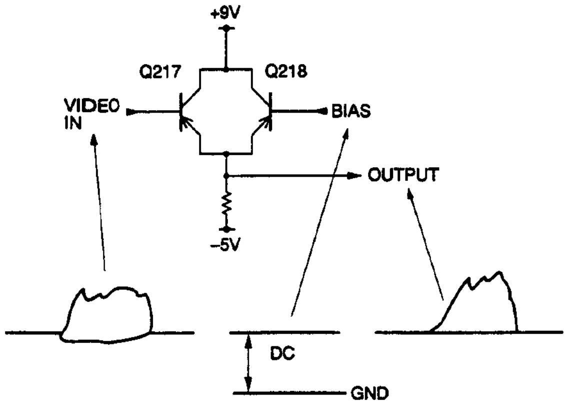


Fig. 8-4-7 Black Slice Circuit

The black slice circuit consists of Q217 and Q218. Video signals (negative noise) which have a level lower than the DC potential supplied to the base of Q218 cannot pass through Q217 and are not output.

8.4.5 Contour Mix

The contour connection signal produced by the CC circuit board is input to Pin 8 of CN8 and mixed with the video signal at Q211.

8.5 CC CIRCUIT BOARD

The CC circuit board electrically emphasizes the contour of the video signal. The vertical contour correction is performed in the up and down directions (dual edged correction) by two 1H delay lines. The horizontal contour correction is also performed by the dual edged correction.

The vertical contour signal is obtained from the G channel signal. Since horizontal contour signal is used for half-pitched pixel offset, it is obtained from a resultant signal of the G and R signals (G + R signal).

The contour signal that is obtained is added to the R, G, B signals in the PR2 circuit board.

8.5.1 Vertical Contour Correction

The vertical contour signal delays the G channel signal by the delay line to 1H and 2H and generates the signal shown in Figure 8-5-1.

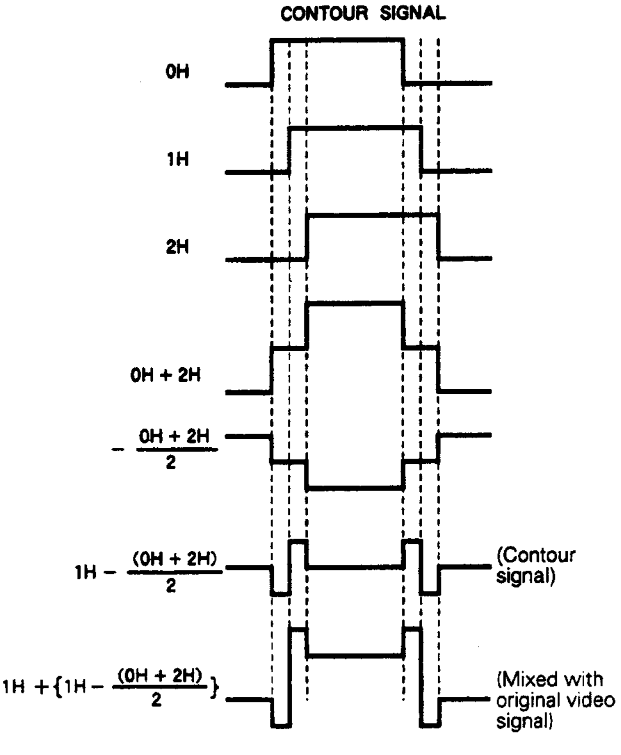


Fig. 8-5-1 Contour Correction

IC101 and IC102 are the CCD delay components which obtain a delay quantity of 1H. This IC drives the master clock of the DR circuit board for the frequency (14.318MHz : NTSC, 14.1875MHz : PAL) that is divided in two. If IC101 is driven by the clock of this frequency, the approximately 250nsec(NTSC)/100ns(PAL) delay does not operate more than the specified 1H. A signal that is delayed by the specified 1H is produced by DL101 and DL202.

A signal that is delayed by 1H is input again to the delay element IC201 to produce a delay of 2H.

A signal that is delayed 1H is input to the Q2 base. A (0H + 2H)/2 signal is input to the emitter. The results adjusted during operation and the collector output of Q2 produce the vertical contour signal of - {1H - (0H + 2H)/2} (vertical contour signals).

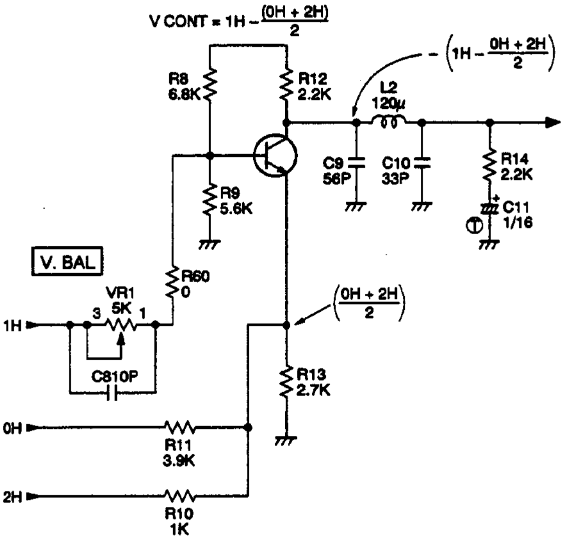

V CONT = 1H - (0H + 2H)/2
R8 6.8K
R12 2.2K
L2 120μ
- (1H - (0H + 2H)/2)
C9 56P
C10 33P
R14 2.2K
C11 1/16
R9 5.6K
V. BAL
R60 0
VR1 5K
3
1
1H
C810P
(0H + 2H)/2
R13 2.7K
0H
R11 3.9K
2H
R10 1K

Fig. 8-5-2 Vertical Contour Correction

8.5.2 Horizontal Contour Correction

In principle, the horizontal contour signal is generated by combining a signal that is delayed a fixed period of time (1τ (tau)) and a signal delayed 2τ so it is the same as the vertical contour signal. The delay (1τ) is approximately 150 nsec. The R channel signal and the signal that is delayed 1H produced in the vertical contour generation circuit are input to the Q7 base. These are added, reversed and output from the Q7 collector (non-delay signal). The -0τ signal output from the Q7 collector is input to DL1 and delayed 1τ. This signal is reflected by the Q8 collector, returns to the same delay circuit and is delayed -2τ. It is mixed with other signals at R36 and a 1τ - (0τ + 2τ)/2 contour signal is input to the Q10 emitter.

8.5.3 Noise Slice Circuit

The noise component is removed (Figure 8-5-4) by passing the signal through a diode which has a forward direction that matches the noise signal. A Shottky diode is used which has a low junction capacitance because the noise exists in the high frequency range.

Contour signals (vertical and horizontal) which have passed the noise slice circuit are output to the PR2 circuit board from Pin 8 of CN8 and mixed with the video signals of the R, G, B channels.

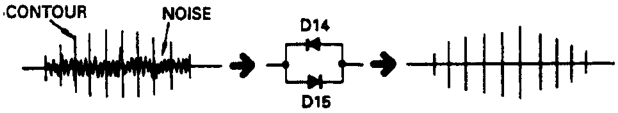

CONTOUR
NOISE
D14
D15

Fig. 8-5-4 Soise Slice

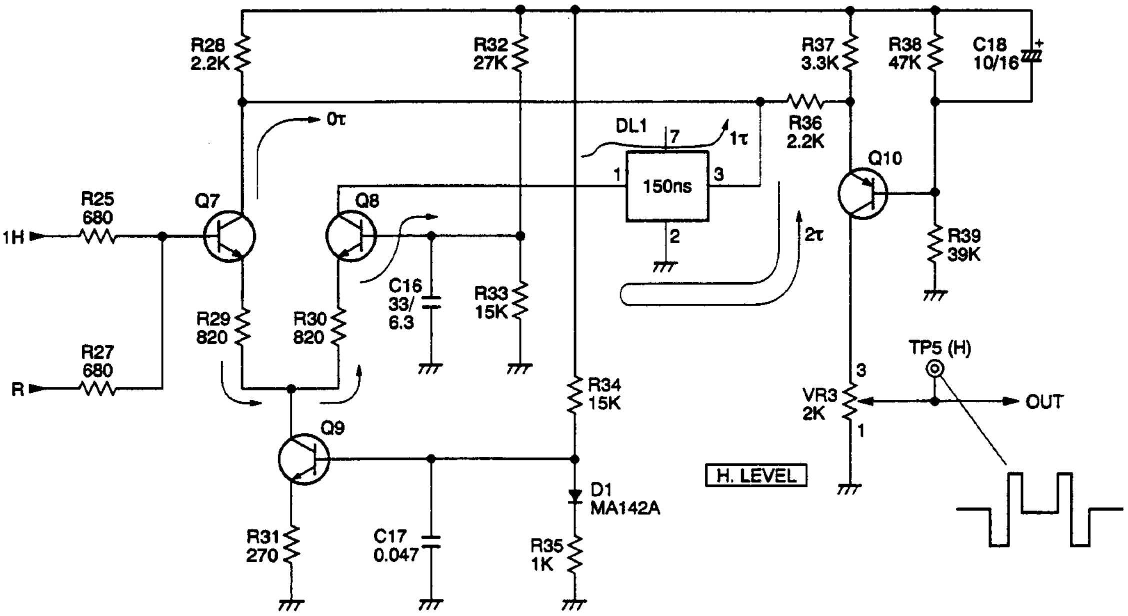

R28 2.2K
R32 27K
R37 3.3K
R38 47K
C18 10/16
0τ
DL1
7
1τ
R36 2.2K
Q10
1
150ns
3
2
2τ
R25 680
Q7
Q8
1H
C16 33/6.3
R33 15K
R39 39K
R29 820
R30 820
R27 680
R
TP5 (H)
Q9
R34 15K
VR3 2K
3
1
OUT
D1 MA142A
H. LEVEL
R31 270
C17 0.047
R35 1K

Fig. 8-5-3 Horizontal Contour Correction

8.6 SE CIRCUIT BOARD

8.6.1N Color Encoder (NTSC)

Y, R-Y and B-Y format color encoders are used in the encoder circuit.
R32-R38 and R47-R52 are matrix circuits for the B-Y signal (0.7R, -0.59G, -0.11B) and the R-Y signal (-0.3R, -0.59G, -0.89B) respectively. The R-Y and B-Y signal are limited to 1.5MHz by Q1 and Q3 respectively.
The NTSC color encoder block figure is shown in Figure 8-6-1N.

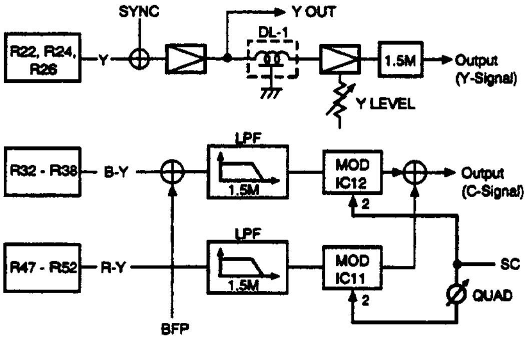


Fig. 8-6-1N Color Encoder (NTSC)

A sub-carrier which has phase differentials of -90° and 0° respectively is supplied to the color modulators IC11 and IC12 and amplitude modulation is performed to the R-Y and B-Y signals. A burst flag pulse (BFP) is added directly before the modulation unit by the B-Y signal and the burst flag sub-carrier is produced by the modulation unit.
This subcarrier is yielded by dividing 28.63636 MHz master clock generated by X1 on the DR board into 3.58 MHz by IC302 and IC1 on the SE board, and the resultant signal is output as a 3.58 MHz subcarrier from pin 19 of IC1.
The modulated R-Y and B-Y signals are mixed and supplied to the VIDEO circuit board by Pin 1 of CN2 for the chroma signal by the band-pass filter (4fsc) that consists of the C33, L1, C34, L2 and C35. These signals are then supplied to the VIDEO circuit board from Pin 1 as a chroma signal. The Y signal is delayed by the delay element D1 and DL2 and is adjusted to the clock time of the delay signal produced by the band-pass filter.
The Y signal is supplied to the VIDEO circuit board from Pin 3 of CN2.

8.6.1P Color Encoder (PAL)

Y, R-Y and B-Y format color encoders are used in the encoder circuit.
R32-R38 and R47-R52 are matrix circuits for the B-Y signal (0.7R, -0.59G, -0.11B) and the R-Y signal (-0.3R, -0.59G, -0.89B) respectively. The R-Y and B-Y signal are limited to 1.5MHz by Q1 and Q3 respectively.
The PAL color encoder block figure is shown in Figure 8-6-1P.

The color modulators IC11 and IC12, which are supplied with different subcarriers whose phases are –90° and 0° respectively, modulate the amplitude of R-Y and B-Y signals. The phase of the subcarrier supplied to IC11 for R-Y signal is oppositely shifted at an angle of 180° every 1H by the line output switching signal (LALT) supplied from pin 7 of IC1 (SSG), and this alternately phase-shifted subcarrier is input to the color modulator.

Just before input to the color modulators, B-Y and R-Y signals are added with burst flag pulse (BFP) respectively, and the resultant signals are formed into burst flag subcarriers by the modulators.
The subcarrier is yielded by dividing 17.734475 MHz clock generated by X401 on the SE board into 4.43 MHz signal by IC1, and the resultant signal is output as the 4.43 MHz subcarrier from pin 19 of IC1.
The modulated R-Y and B-Y signals are mixed and supplied to the VIDEO circuit board by Pin 1 of CN2 for the chroma signal by the band-pass filter (4fsc) that consists of the C33, L1, C34, L2 and C35. These signals are then supplied to the VIDEO circuit board from Pin 1 as a chroma signal. The Y signal is delayed by the delay element D1 and DL2 and is adjusted to the clock time of the delay signal produced by the band-pass filter.
The Y signal is supplied to the VIDEO circuit board from Pin 3 of CN2.

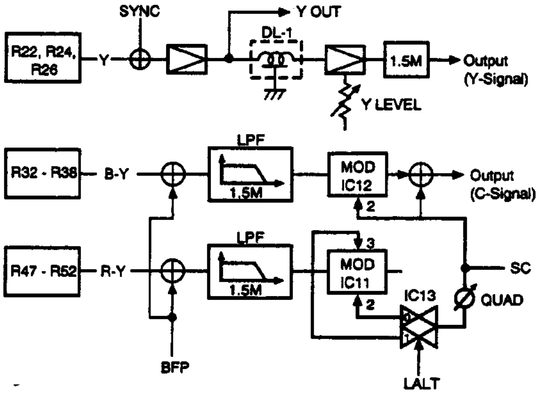


Fig. 8-6-1P Color Encoder (PAL)

8.7 VIDEO CIRCUIT BOARD

The video circuit board contains the circuit that sends the PRE/REC (PRE/REC AMP) circuit board the Y signal from the camera as the FM signal and the C signal as the down-converted chroma signal to the circuit that converts the FM signal from the PRE/REC circuit board to the Y signal and the down-converted chrom signal to the C signal. This section explains the recording and playback systems.

8.7.1 Y Signal Recording System

The Y signal recording system block figure is shown in Figure 8-7-1. The Y signal from the SE circuit board passes through the Q25 buffer. It is separated into two signals, one which passes through the Q181 sync separator circuit from Q177 and is sent to the S/S circuit board as the SYNC signal (reference of servo circuit). The other signal passes through Q10 and Q100 buffer and is input to IC9 pin 50. It passes through the auto-gain control circuit in IC9 and is output from the IC from pin 40. The output signal is separated into the S-VHS and VHS modes. The low-pass filter (LPF: 5 MHz) of FL4 and FL5 is used when the VTR is in the S-VHS mode. The low-pass filter (LPF: 2.8 MHz) of FL2 and FL3 is used when the VTR is in the VHS mode. When the VTR is in the S-VHS mode, the signal passes through the REC sub emphasis (S-VHS SUB EMPH). This circuit increases the high-band frequency response to conform to S-VHS standard for the non-linear emphasis circuit during recording.

This circuit operates as the non-linear de-emphasis circuit during VTR playback. The signal used for the S-VHS is returned to IC9 pin 36 and the signal for VHS is returned to pin 38. Each signal is clamped and either one is selected at the switch block. The signal is input to the YNR (Y signal noise reduction) block after the selection is performed. This block does not operate. The Y signal noise reduction is output once from pin 32 and returns again to IC9 from pin 31 through C165. The signal is clamped next and input to the MPE (Main Emphasis) block. The high range frequency response of the signal are increased to conform to the VHS standard. (To reduce deterioration of signal on S/N ratio during frequency modulation/demodulation, high frequency of video signal is raised to the allowable limit of the frequency response of the VHS standard.

The signal is modulated to an FM signal in the MOD (modulation) block from 5.4 MHz to 7 MHz (1.6MHz bandwidth) in the S-VHS mode and from 3.4MHz to 4.4MHz(NTSC), 3.8MHz to 4.8MHz(PAL) (deviation : 1MHz) in the VHS mode. The signal is then output from pin 21. It passes through the trap filter of L15, C70 in the S-VHS mode and through the high-pass filter of C62, C63 and L13 in the VHS mode. This circuit is installed to limit the FM signal bandwidth so it does not overlap the waveforms when the FM signal and the down-converted chroma signal are mixed on the PRE/REC circuit board.

The FM signal passes through from Q45 buffer to Q40 buffer and is output to the PRE/REC circuit board.

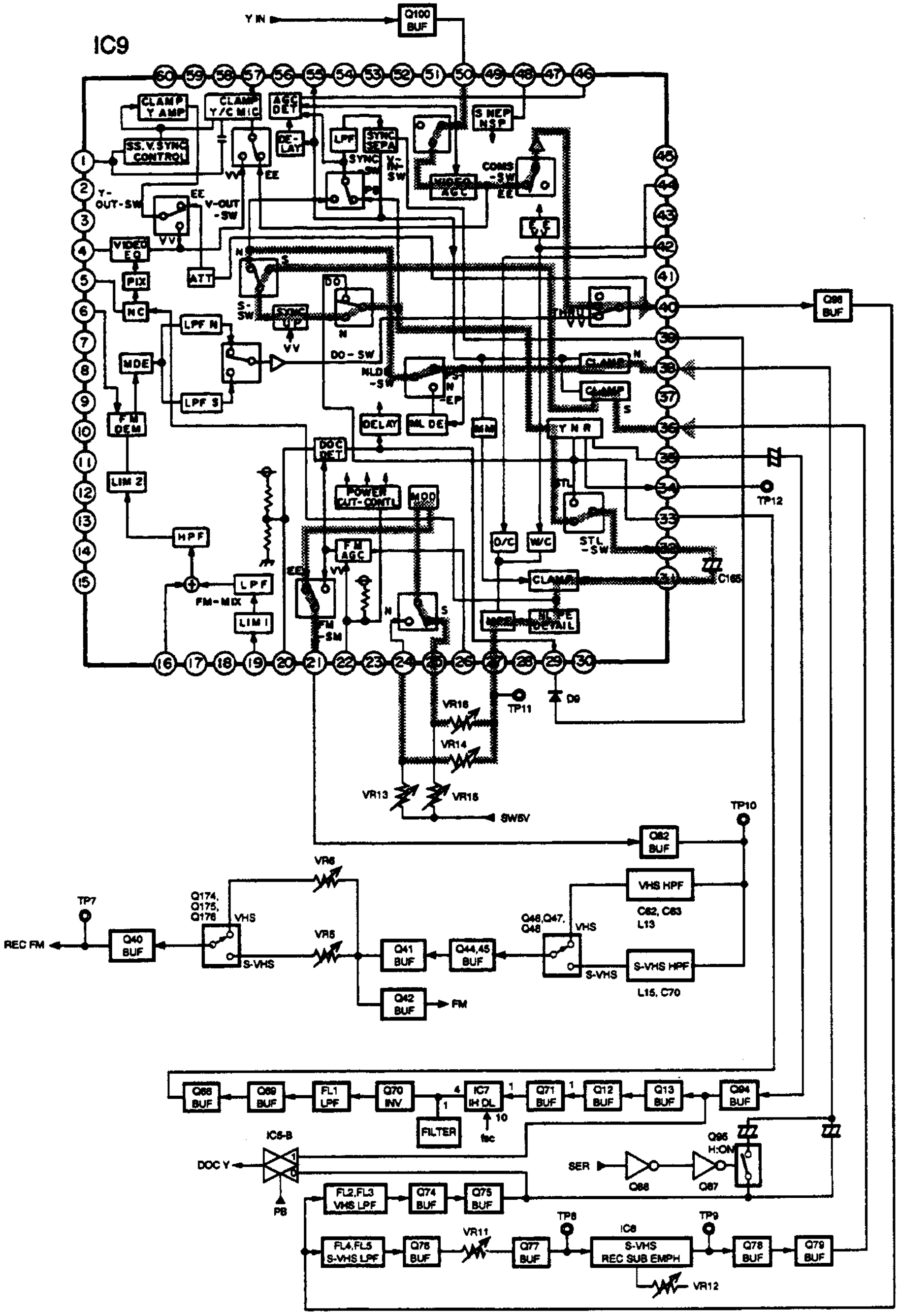

IC9
Y IN
Q100 BUF
CLAMP Y AMP
CLAMP Y/C MIC
AGC DET
SS.V.SYNC CONTROL
DE-LAY
LPF
SYNC SEPA
S NEP NSP
VIDEO AGC
COMB-SW
Y-OUT-SW
V-OUT-SW
VIDEO EQ
PIX
ATT
NC
S-SW
SYNC TIP
DO
DO-SW
LPF N
LPF S
MDE
NLDE-SW
CLAMP
FM DEM
DELAY
NL DE
DOC DET
YNR
LIM 2
POWER CUT-CONTL
MOD
HPF
FM AGC
D/C
W/C
STL-SW
LPF
FM-MIX
LIM I
FM-SW
MPE
DETAIL
CLAMP
C165
TP12
TP11
D9
VR16
VR14
VR13
VR15
SW5V
TP10
Q62 BUF
VHS HPF
C62, C63 L13
S-VHS HPF
L15, C70
Q46,Q47, Q48
VHS
S-VHS
Q44,45 BUF
Q41 BUF
Q42 BUF
FM
VR6
VR5
Q174, Q175, Q176
TP7
REC FM
Q40 BUF
Q86 BUF
Q68 BUF
Q69 BUF
FL1 LPF
Q70 INV
IC7 1H DL
FILTER
fsc
Q71 BUF
Q12 BUF
Q13 BUF
Q84 BUF
IC5-B
DOC Y
PB
Q95 H:ON
SER
Q86
Q87
FL2,FL3 VHS LPF
Q74 BUF
Q75 BUF
TP8
TP9
IC6 S-VHS REC SUB EMPH
FL4,FL5 S-VHS LPF
Q76 BUF
VR11
Q77 BUF
Q78 BUF
Q79 BUF
VR12

Fig. 8-7-1 Y signal Recording System

8.7.2 Chroma Signal Recording System

The chroma signal (fsc) recording system is input from IC13 pin 9, passes the REC/PLAY switch and is output one time from IC13 pin 5. The output signal passes through the band pass filter of FL7 then returns to pin 17 of IC13 through the Q163 buffer. (The frequency of the band pass filter at the F7 filter is fsc. This is not related because only the chroma signal is sent from the camera.) It passes through the ACC block, MAIN BM block, BURST UP block and is output from pin 11. The ACC block detects the burst signal level and controls the entire gain of the chroma signal to make the burst signal level become uniform. The MAIN BM (Main Balanced Modulator) block changes the chroma signal to a low-frequency band chroma signal. The chroma signal (fsc) and signal with (fsc + 40 fH) are supplied in this block. The chroma signal is converted to a 40fH signal, which is the differential component of the two signals from the balanced modulator circuit, and then output. At this time, the 2fsc+40fH signal which is the sum of the components is also output. The BURST UP block is one of the standards of the VHS format and improves the S/N of the burst signal to two times (6dB) the amplitude of the burst signal. The amplitude of the burst signal returns to the one-half which is the original level when playback is performed.

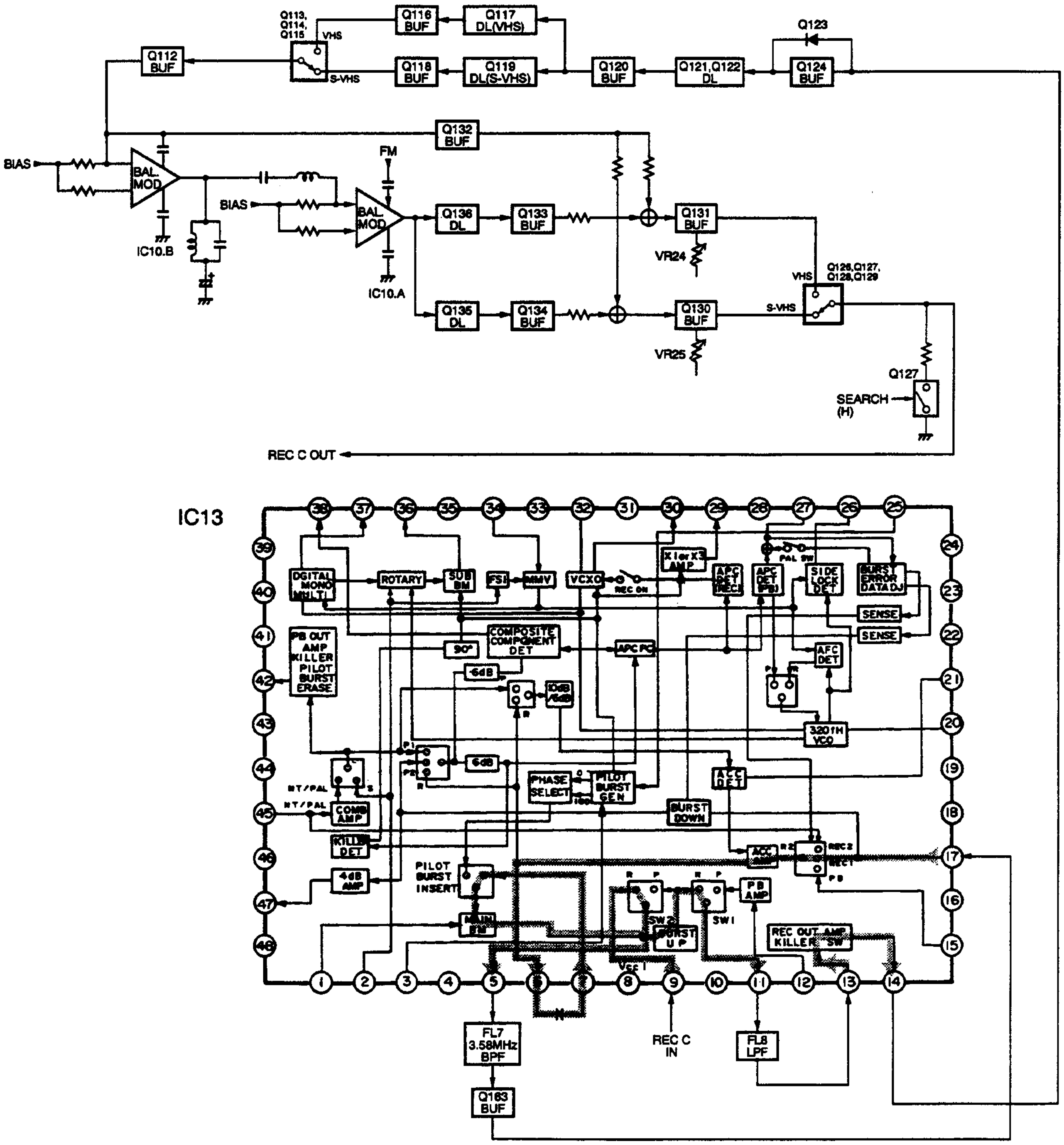

Q113, Q114, Q115
VHS
S-VHS
Q112 BUF
Q116 BUF
Q117 DL(VHS)
Q118 BUF
Q119 DL(S-VHS)
Q120 BUF
Q121,Q122 DL
Q123
Q124 BUF
Q132 BUF
BIAS
BAL. MOD
FM
IC10.B
BIAS
BAL. MOD
IC10.A
Q136 DL
Q133 BUF
Q131 BUF
VR24
Q135 DL
Q134 BUF
Q130 BUF
VR25
Q126,Q127, Q128,Q129
VHS
S-VHS
Q127
SEARCH (H)
REC C OUT
IC13
DGITAL MONO MULTI
ROTARY
SUB BM
FSI
MMV
VCXO
REC ON
X1 or X3 AMP
APC DET (REC)
APC DET (PB)
PAL SW
SIDE LOCK DET
BURST ERROR DATA DJ
SENSE
SENSE
PB OUT AMP KILLER PILOT BURST ERASE
90°
COMPOSITE COMPONENT DET
APC FC
AFC DET
-6dB
10dB /6dB
320fH VCO
P1
P2
R
6dB
NT/PAL
NT/PAL
COMB AMP
PHASE SELECT
PILOT BURST GEN
ACC DET
BURST DOWN
KILLER DET
ACC AMP
REC2
REC1
PB
4dB AMP
PILOT BURST INSERT
MAIN BM
SW2
BURST UP
SW1
PB AMP
REC OUT AMP KILLER SW
Vcc1
FL7 3.58MHz BPF
Q163 BUF
REC C IN
FL8 LPF

Fig. 8-7-2 Chroma Signal Recording System

The (2fsc+40fH) signal is removed by the low pass filter FL8 from the low frequency band chroma signal output from pin 11. The chroma signal returns to IC13 pin 13 and is input to the REC OUT AMP (ACC of chroma signal) & KILLER SW block. The KILLER SW block is the circuit that prevents the chroma signal from being output when the black and white signal is input. It does not operate in this unit. It is only used for the output amplifier in this block. The low frequency band chroma signal output from IC13 pin 14 adjusts the delay period of the Y signal by the delay line consisting of Q124 to Q112. Q121 and Q122 form the common delay line for the S-VHS mode and VHS mode. Q119 is the exclusive delay line for the S-VHS mode and Q117 is the exclusive delay line for the VHS mode. The signal passes the Q112 buffer and is separated into two directions. One part is input to the circuit that sends it to the Q132 buffer and the other is input to the beat canceller circuit. The beat canceller circuit reduces the cross modulation noise (2 times the 40fH beat) of the AM modulation (down-converted chroma signal) component during recording that appears in the FM demodulation signal when playback is performed.

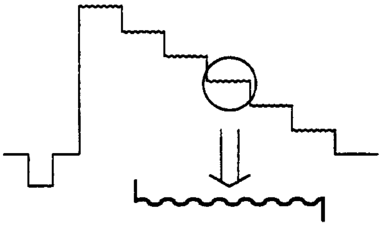


Fig. 8-7-3 Cross moduration of Y signal

In the VHS format, the low frequency band chroma signal and frequency modulated Y signal are mixed when recorded on the tape and the necessary cross modulation noise is always generated in the playback signal. The cross modulation is increased proportionally if the recording level of the chroma signal increases. The cross modulation is reduced according to the extent that the signal of the inverse phase signal of this frequency is mixed because it is known that the cross modulation frequency is 2 times 40fH. The 2 times 40fH signal of the inverse phase is produced by IC10. Q135 is the delay line that adjusts the timing in the S-VHS mode. Q136 is the delay line that adjusts the timing in the VHS mode. These are output to the PRE/REC circuit board by Q128 and Q129 respectively.

8.7.3 Y Signal Playback System

The block figure of the Y signal playback system is shown in Figure 8-7-4. The FM signal from the PRE/REC circuit board is amplified at IC6-B and then separated into two circuits.

One circuit is for the VHS mode and the other is for the S-VHS mode. The two circuits are basically the same circuit, but the difference is that the frequency response adjustments of 1CH and 2CH of the video head can be performed individually only in the S-VHS mode. A filter is input to remove the down-converted chroma signal from the FM signal. After the level adjustment is performed in the AGC circuit of IC6-A, the signal is input to IC9 pin 16. The signal is demodulated to the Y signal from the FM signal by the FM DEM block in IC9. De-emphasis is performed which is opposite when recording is performed in the block MDE. The demodulated Y signal is output from IC pin 40, separated in the S-VHS mode and VHS mode and passes through the low pass filter. The signal is input to the SUB EMPH circuit of IC8 in the S-VHS mode and de-emphasis is performed in the S-VHS mode which is opposite when recording is performed. These signals are returned to IC9 by pin 36 and pin 38 respectively and the signals are selected by the switch in the IC. The Y signal is then input to the YNR block. This block is not operated for the noise reduction circuit. The Y signal returned to the regular signal is output from pin 57. After passing the Q39 buffer, the signals that pass the noise cancel circuit of Q38 to D4 and the Y signal are amplified by the differential amplifier of Q36, Q35 and output to the SE circuit board from Q18.

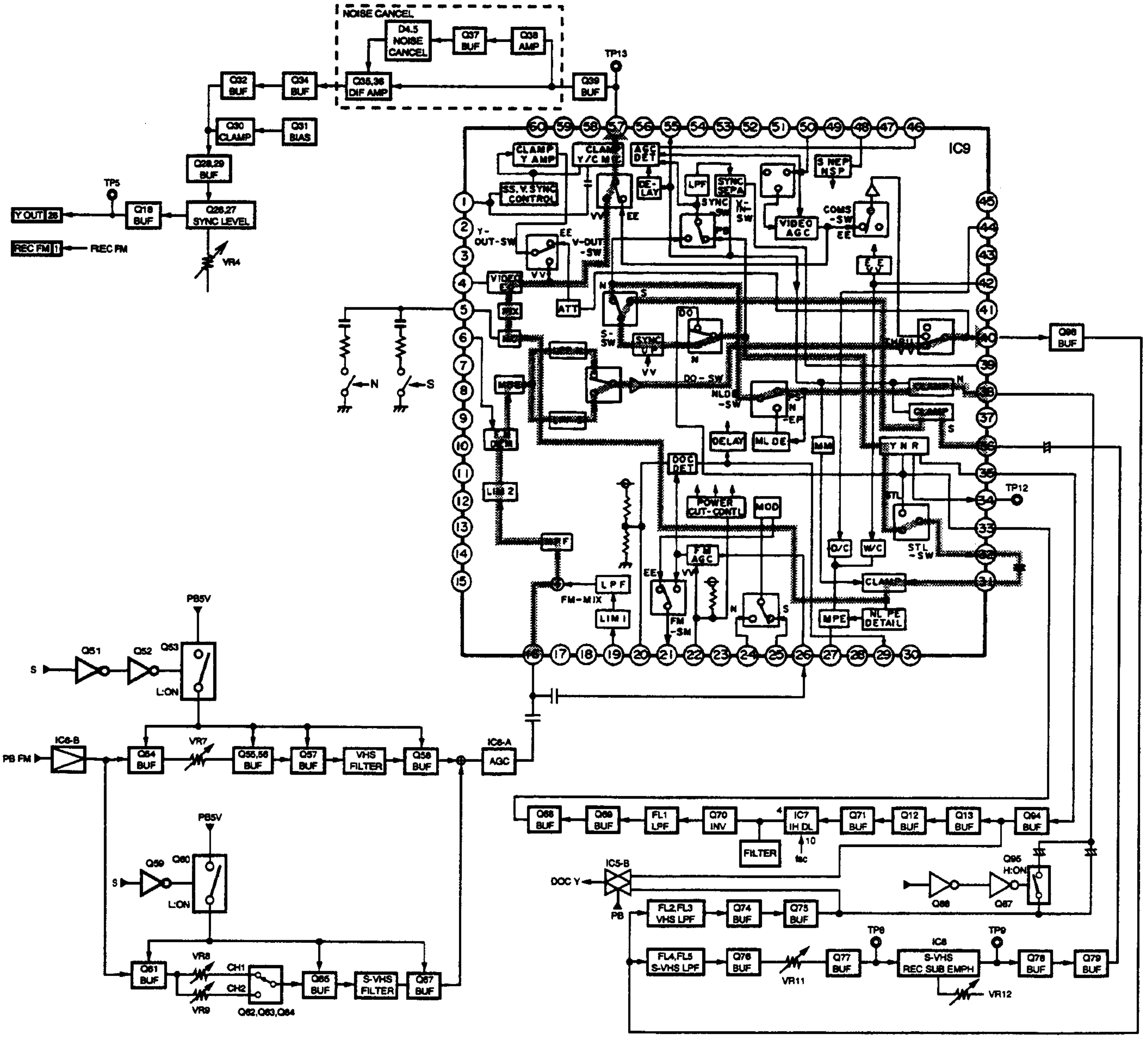

NOISE CANCEL
D4,5 NOISE CANCEL
Q37 BUF
Q38 AMP
Q35,36 DIF AMP
Q32 BUF
Q34 BUF
Q39 BUF
TP13
Q30 CLAMP
Q31 BIAS
Q28,29 BUF
TP5
Y OUT 38
Q18 BUF
Q26,27 SYNC LEVEL
VR4
REC FM 1
REC FM
IC9
CLAMP Y AMP
CLAMP Y/C MIX
AFC DET
SS. V.SYNC CONTROL
DE-LAY
LPF
SYNC SEPA
S NEP NSP
Y-OUT-SW
V-OUT-SW
EE
VV
VIDEO AGC
COMS -SW
ATT
S-SW
SYNC TIP
DO
DO-SW
NLD -SW
DELAY
ML DE
MM
Y N R
CLAMP
DOC DET
POWER CUT-CONTL
MOD
LIM 2
LIM 1
LPF
FM-MIX
FM AGC
FM -SW
O/C
W/C
STL -SW
MPE
NL PE DETAIL
N
S
TP12
PB5V
Q51
Q52
Q53
L:ON
IC6-B
PB FM
Q54 BUF
VR7
Q55,56 BUF
Q57 BUF
VHS FILTER
Q58 BUF
IC6-A
AGC
Q59
Q60
Q61 BUF
VR8
CH1
CH2
VR9
Q62,Q63,Q64
Q65 BUF
S-VHS FILTER
Q67 BUF
Q66 BUF
Q68 BUF
Q69 BUF
FL1 LPF
Q70 INV
IC7 1H DL
FILTER
fsc
Q71 BUF
Q12 BUF
Q13 BUF
Q94 BUF
IC5-B
DOC Y
PB
Q95 H:ON
Q86
Q87
FL2,FL3 VHS LPF
Q74 BUF
Q75 BUF
TP8
TP9
FL4,FL5 S-VHS LPF
Q76 BUF
VR11
Q77 BUF
IC8 S-VHS REC SUB EMPH
VR12
Q78 BUF
Q79 BUF

Fig. 8-7-4 Y Signal PB System

8.7.4 Chroma Signal Playback System

The chroma signal playback system block figure is shown in Figure 8-7-5. The low frequency band chroma signal input from the PRE/REC circuit board passes the Q153 buffer and the frequency component for the horizontal synchronization signal from switching regurator is removed by the H-Trap filter (fH) at L50, C257, the Y signal component is removed by the low pass filter at FL9 and the Hi-Fi audio component is removed by the Hi-Fi TRAP filter in L49 and C256. The delay line of Q152 and Q151 is input the adjust the phase of the Y signal and the chroma signal in the VHS mode. The delay line of Q150 and Q149 is input to adjust the phase of the Y signal and the chroma signal in the S-VHS mode.
Q145 is a buffer and sends the signal to IC13 pin 12. After the PB AMP block is amplified in the IC it is input again in pins 11 to 15. The signal that is input again to IC13 detects the level of the burst signal in the same manner as when recording is performed in the ACC AMP block and controls the entire gain of the chroma signal so the burst signal level is uniform. The MAIN BM (Main Balanced Modulator) block returns the low frequency band chroma signal to the original level. This block operates as the balanced modulator when recording is performed and as the demodulator when playback is performed. The (fsc+40fH) signal is supplied and the fsc signal which is the differential component of the two signals and 40fH of the input signal and the signal of the fsc + 2 times 40fH that is the sum of the components of 40fH and the two signals is also output. The BURST UP block does not operate during playback. The signal passes the FL7 (band pass filter) output from pin 5 of the IC. The chroma signal is only the fsc component at this time. The chroma signal input again to IC13 from pin 17 returns to the original level of the burst signal at the BURST DOWN block. The chroma signal amplified by the 4dB AMP block is output from IC pin 13. After it passes through buffer Q162 it is input to the crosstalk canceller at DL2. The playback chroma signal includes the crosstalk from the adjacent track on the tape. This condition is unavoidable due to the configuration of the VHS system. Because VHS system is the gard band less recoding system. However, the signals are doubled if the signal that passes through the 1H delay line is added to the signal that does not pass through the 1H delay line and the signal crosstalk from the adjacent track is removed and almost completely eliminated. This comes from the reason that the phase of crosstalk is shifted in recording to be reverse to the signal 1 horizontal period (1 H) ahead. The signal crosstalk from the adjacent track is removed and almost completely eliminated. The chroma signal that is input again to IC13 from pin 45 is input to the PB OUT AMP and the KILLER block. The PB OUT AMP is the output amplifier, as its name implies. The KILLER block is a circuit which prevents the output of the chroma signal when playback of the black and white signal is performed. The chroma signal output from pin 42 passes the amplifier in Q142 and Q143 and is output to the SE circuit board from the Q140 buffer.

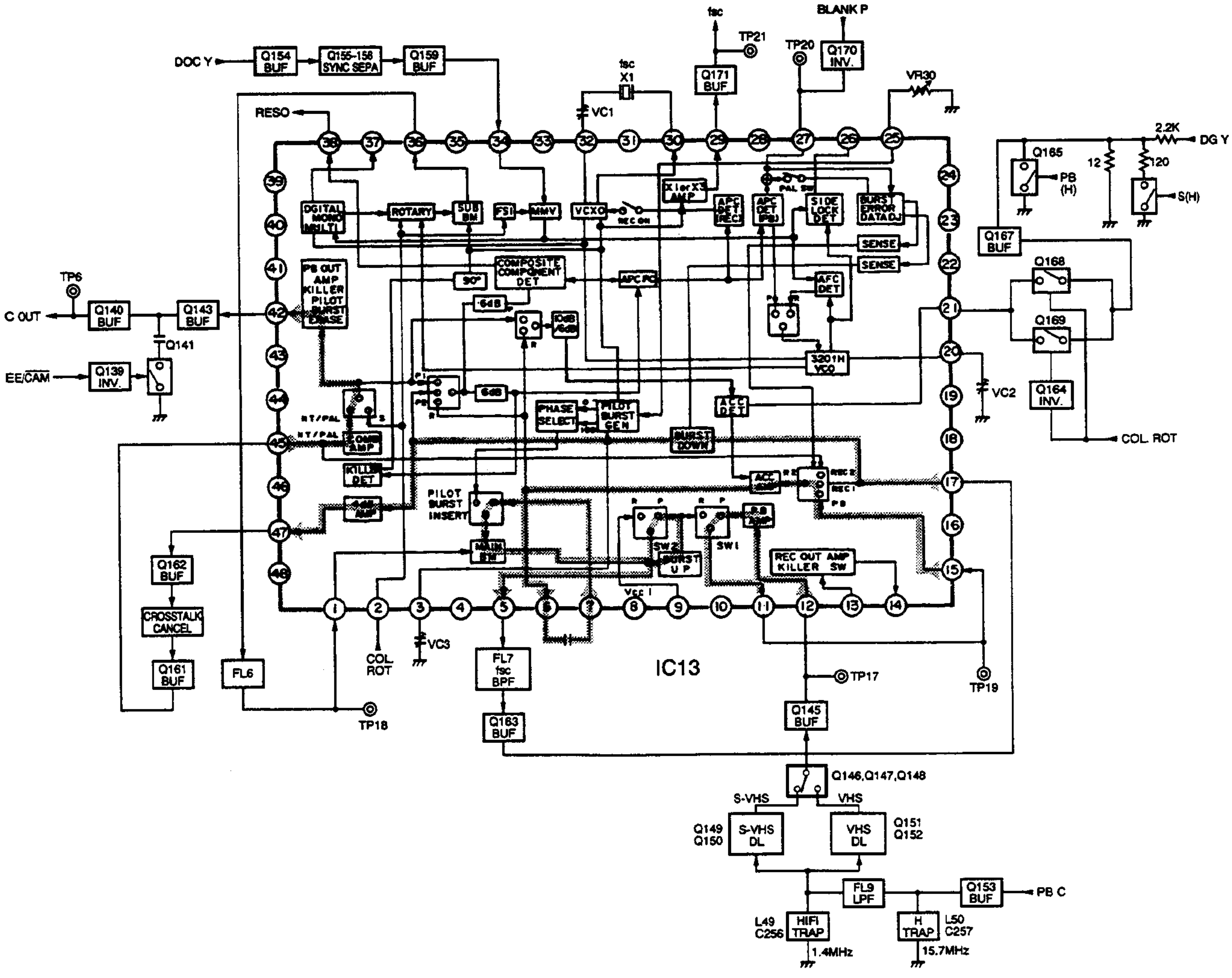

fsc
BLANK P
TP21
TP20
Q170 INV.
Q171 BUF
DOC Y
Q154 BUF
Q155-156 SYNC SEPA
Q159 BUF
fsc X1
VC1
VR30
RESO
2.2K
DG Y
Q165
PB (H)
12
120
S(H)
DGITAL MONO MULTI
ROTARY
SUB BM
FSI
MMV
VCXO
REC
X1 or X3 AMP
APC DET (REC)
APC DET (PB)
SIDE LOCK DET
BURST ERROR DATA DJ
SENSE
SENSE
Q167 BUF
Q168
Q169
Q164 INV.
COL ROT
VC2
PB OUT AMP KILLER PILOT BURST ERASE
90°
COMPOSITE COMPONENT DET
APC PG
6dB
0dB 6dB
AFC DET
320fH VCO
ACC DET
TP6
C OUT
Q140 BUF
Q143 BUF
Q141
EE/CAM
Q139 INV.
NT/PAL
COMB AMP
6dB
PHASE SELECT
PILOT BURST GEN
BURST DOWN
KILLER DET
ACC AMP
REC PB
4dB AMP
PILOT BURST INSERT
8dB AMP
SW2
SW1
MAIN BM
BURST UP
REC OUT AMP KILLER SW
Vcc1
Q162 BUF
CROSSTALK CANCEL
Q161 BUF
FL6
TP18
COL ROT
VC3
FL7 fsc BPF
Q163 BUF
IC13
TP17
TP19
Q145 BUF
Q146,Q147,Q148
S-VHS
VHS
Q149 Q150
S-VHS DL
VHS DL
Q151 Q152
FL9 LPF
Q153 BUF
PB C
L49 C256
HIFI TRAP
1.4MHz
H TRAP
L50 C257
15.7MHz
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48

Fig. 8-7-5 Chroma Signal PB System

8.7.5 Frequency and phase shift Compensation

In the down-converted chroma signal that is played back is expressed as fsc', the value of fsc' is expressed as $f_c' = 40f_H \pm \Delta f$. $\pm\Delta f$ expresses the phase shift due to rotation irregularities of the video head or tape elasticity that is compensated for by the APC circuit. In this unit only $\pm\Delta f$ is compensated for when playback is performed.

The reference signal of the APC block is the fsc signal output from the fsc VCXO block. The signal that is compared is the down-converted chroma signal (fc'). The burst signal is removed from the low frequency band chroma signal (fc') and the 320fH VCXO block oscillation is controlled. The 320fH oscillation correlates with $\pm\Delta f$ by this operation. The fsc signal from the VCXO block and the 320fH signal that includes the phase differential ($\pm\Delta f$) from the 320fH VCXO block are input in the SUB BM block. The 320fH is counted down 1/8 of a count in this block and the 40fH signal that is counted down contains the phase differential ($\pm\Delta f$). The output for the SUB BM block is calculated by the following equation.

$$f_{sc} \pm (40f_H \pm \Delta f) = f_{sc} \pm f_c'$$

Only the signal fsc + fc' is passed at FL6 and input to the MAIN BM block. This signal and the down-converted chroma signal (fc) are input to the MAIN BM block. As a result, the fsc which is the differential of the two components and the fsc + 2 time fc' that is the sum of the components are output from the MAIN BM block output. Only the fsc signal is output at the (COMB filter) DL2.

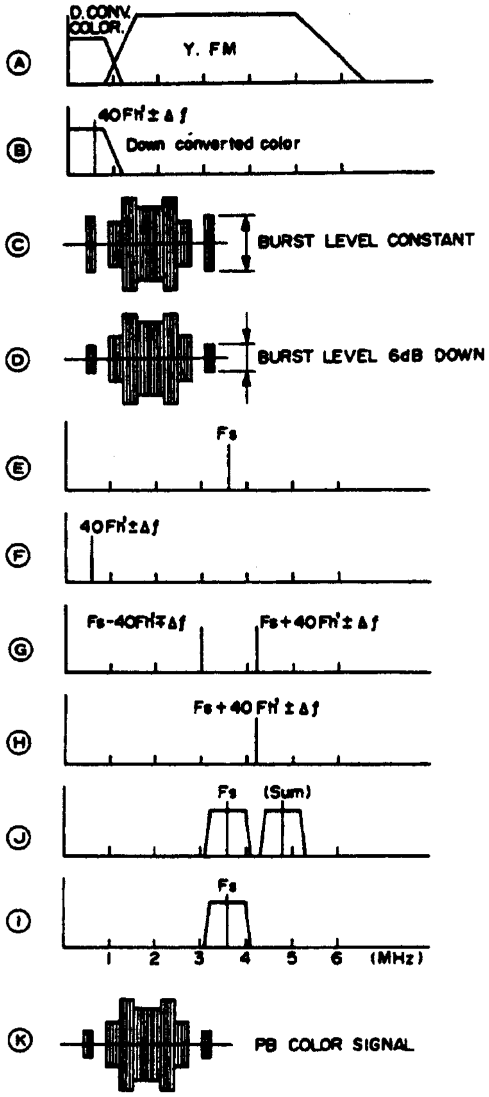


Fig. 8-7-7

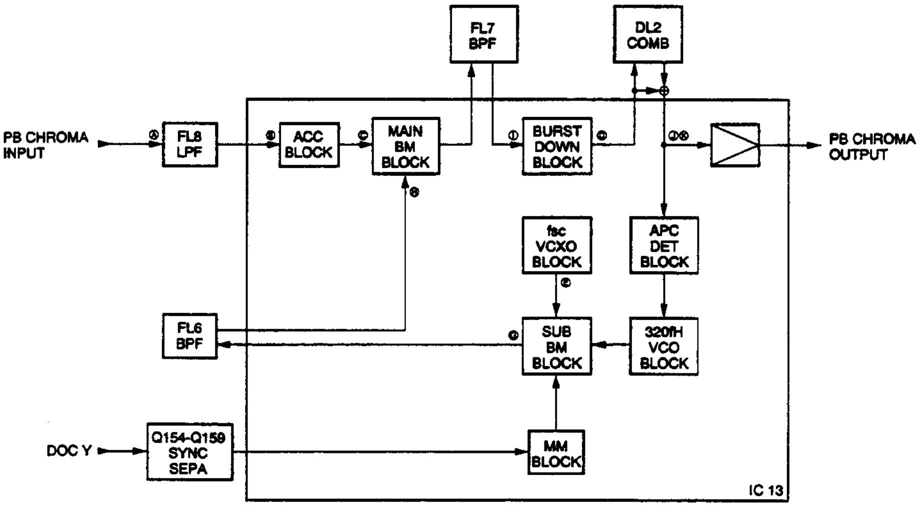

FL7 BPF
DL2 COMB
PB CHROMA INPUT
FL8 LPF
ACC BLOCK
MAIN BM BLOCK
BURST DOWN BLOCK
PB CHROMA OUTPUT
fsc VCXO BLOCK
APC DET BLOCK
FL6 BPF
SUB BM BLOCK
320fH VCO BLOCK
DOC Y
Q154-Q159 SYNC SEPA
MM BLOCK
IC 13

Fig. 8-7-6

8.8 S/S CIRCUIT BOARD

This is the same circuit as the GY-X2B. The term S/S circuit board is an abbreviation for SYSCON (System control/Servo control) circuit board. It performs the control for the VTR mechanism. It controls the drum servo, capstan servo and frame servo.

8.8.1 Drum Servo Control

The drum servo control block figure is shown in Figure 8-8-1. The sensor below the VTR drum detects the drum rotation and the signal from DRUM PG and DRUM FG are input to the S/S circuit board for the pulse. The DRUM PG is 30Hz for NTSC and 25Hz for PAL and the DRUM FG is 600Hz for NTSC and 500Hz for PAL. The DRUM FG signal is input to IC7 pin 6, converted to the DRUM FV signal in the FV converter block and output. The DRUM PG signal is input to IC7 pin 7, converted to the D.FF signal and DRUM PV signal and output. The DRUM FV signal is compared with a fixed voltage in the IC3.1 comparator and the drum rotation voltage is controlled according to the comparison result. The DRUM ERR signal from the MDA circuit board is also compared with a fixed voltage in the same manner and the rotation voltage is controlled according to the comparison result. The DRUM FV signal becomes the DRUM REF signal at IC2.4 and also becomes the SERVO LOCK signal at the CAP SERVO LOCK signal and the window comparator. Parallel to serial conversion is performed to the SERVO LOCK signal at IC25 and the signal is input at IC17 (SYSCON CPU). The motor drive IC of the MDA circuit board is controlled from IC17 and the drum rotation ON/OFF is controlled.

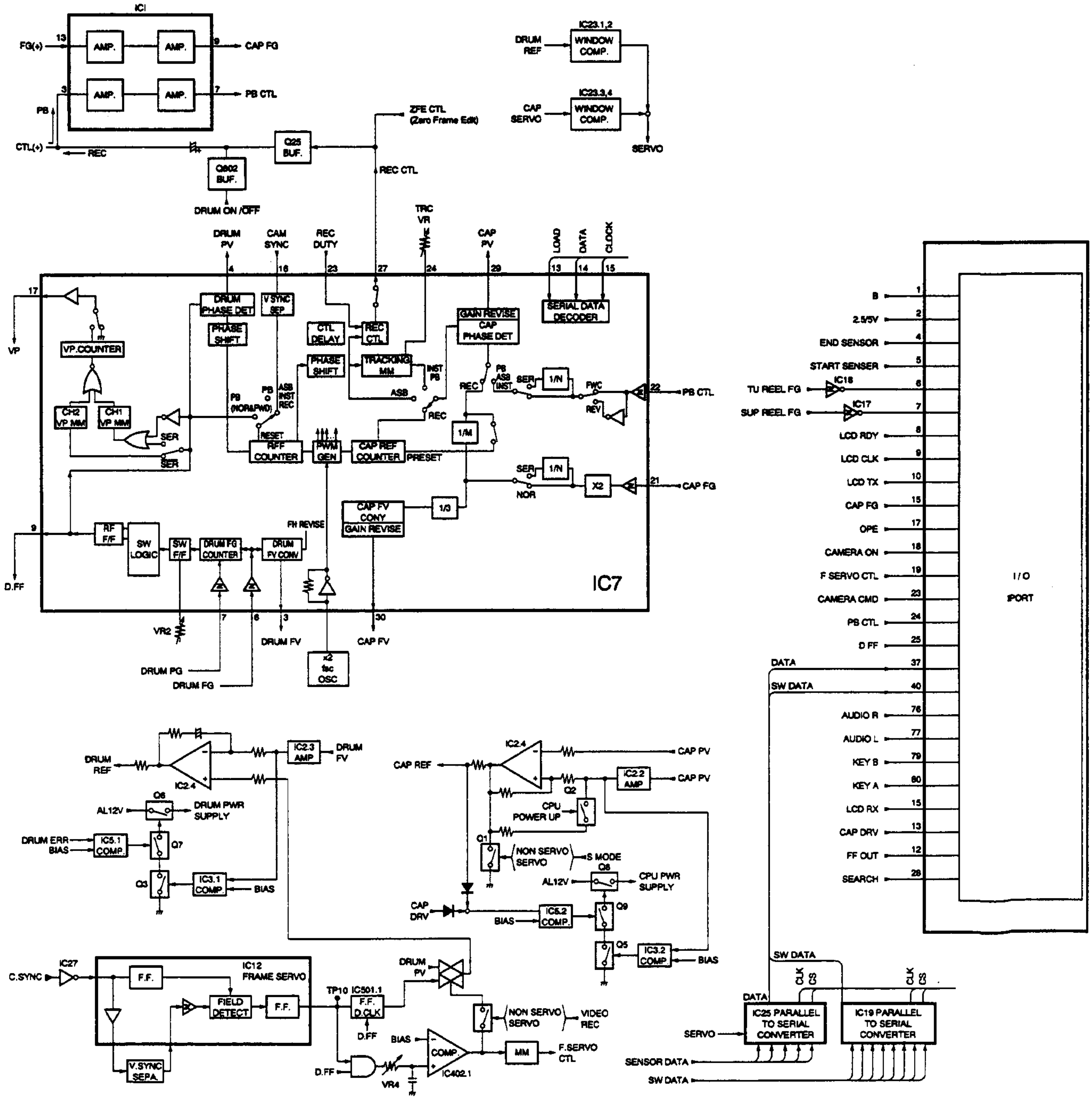

IC1
FG(+)
AMP.
CAP FG
PB
PB CTL
CTL(+)
REC
Q25 BUF.
Q802 BUF.
DRUM ON /OFF
ZFE CTL (Zero Frame Edit)
REC CTL
IC23.1,2
DRUM REF
WINDOW COMP.
IC23.3,4
CAP SERVO
SERVO
TRC VR
DRUM PV
CAM SYNC
REC DUTY
CAP PV
LOAD
DATA
CLOCK
VP
VP.COUNTER
DRUM PHASE DET
V.SYNC SEP
PHASE SHIFT
CTL DELAY
REC CTL
GAIN REVISE
CAP PHASE DET
SERIAL DATA DECODER
TRACKING MM
CH2 VP MM
CH1 VP MM
SER
RESET
RFF COUNTER
PWM GEN
CAP REF COUNTER
PRESET
1/M
1/N
FWD
REV
PB CTL
CAP FG
X2
NOR
CAP FV CONV
GAIN REVISE
FH REVISE
1/3
D.FF
RF F/F
SW LOGIC
SW F/F
DRUM FG COUNTER
DRUM FV CONV
IC7
VR2
DRUM PG
DRUM FG
DRUM FV
CAP FV
x2 fsc OSC
B
2.5/5V
END SENSOR
START SENSER
TU REEL FG
IC18
SUP REEL FG
IC17
LCD RDY
LCD CLK
LCD TX
CAP FG
OPE
CAMERA ON
F SERVO CTL
CAMERA CMD
PB CTL
D FF
DATA
SW DATA
AUDIO R
AUDIO L
KEY B
KEY A
LCD RX
CAP DRV
FF OUT
SEARCH
I/O PORT
DRUM REF
IC2.4
IC2.3 AMP
DRUM FV
Q6
AL12V
DRUM PWR SUPPLY
DRUM ERR
BIAS
IC5.1 COMP.
Q7
Q3
IC3.1 COMP.
BIAS
CAP REF
CAP PV
IC2.2 AMP
Q2
CPU POWER UP
Q1
NON SERVO
SERVO
S MODE
Q8
CPU PWR SUPPLY
CAP DRV
IC5.2 COMP.
Q9
Q5
IC3.2 COMP.
C.SYNC
IC27
F.F.
IC12 FRAME SERVO
FIELD DETECT
V.SYNC SEPA.
TP10 IC501.1
F.F. D.CLK
D.FF
VR4
COMP.
IC402.1
MM
F.SERVO CTL
VIDEO REC
SW DATA
CLK
CS
IC25 PARALLEL TO SERIAL CONVERTER
IC19 PARALLEL TO SERIAL CONVERTER
SERVO
SENSOR DATA

Fig. 8-8-1 Drum Servo Control

8.8.2 Capstan Servo Control

The FG (+) pulse sent from the capstan motor becomes the CAP FG signal at IC1 and is input by pin 15 in IC17 (SYSCON CPU). The CAP FG signal is input to IC21 and converted to the CAP PV and CAP FV signals.
These two signals become the CAP SERVO signal at IC2.1 and input to the window comparator at IC23.3 and IC23.4. It is mixed with the DRUM SERVO here and input to IC25 as the SERVO LOCK signal. It is input to IC17 (SYSCON CPU) for the serial data. The CAP DRV signal is output from IC17 and mixed at the diode-or circuit with the previously described CAP SERVO signal. The capstan motor drive voltage is controlled and applied to the capstan servo according to the comparison result at the IC5.2 comparator.

8.8.3 Frame Servo Control

This control is only performed during recording.

The SYNC signal is input to IC12 and becomes the signal that repeats the high/low for each field. IC402, IC403, IC404 determine if the frame servo is locked or not. The TP3 is fixed to the "H" level in the locked condition. TP3 is set to "L" when the condition is not locked (F. SERVO CTL signal).

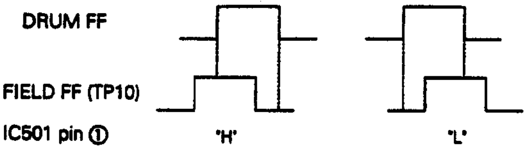

DRUM FF
FIELD FF (TP10)
IC501 pin ①
'H'
'L'

Fig. 8-8-4

The output of the previously described IC12 and the D.FF (DRUM FLIP FLOP) signal are input to the IC501 D type FF (FLIP FLOP) and becomes the output shown in Figure 8-8-4. This signal is input to the analog switch of IC502 and the output signal is switched by the F. SERVO CTL. When the servo is applied, the DRUM PV signal output from IC7 pin 4 is output and when the servo is removed the signal output from IV501 is output by IC502.

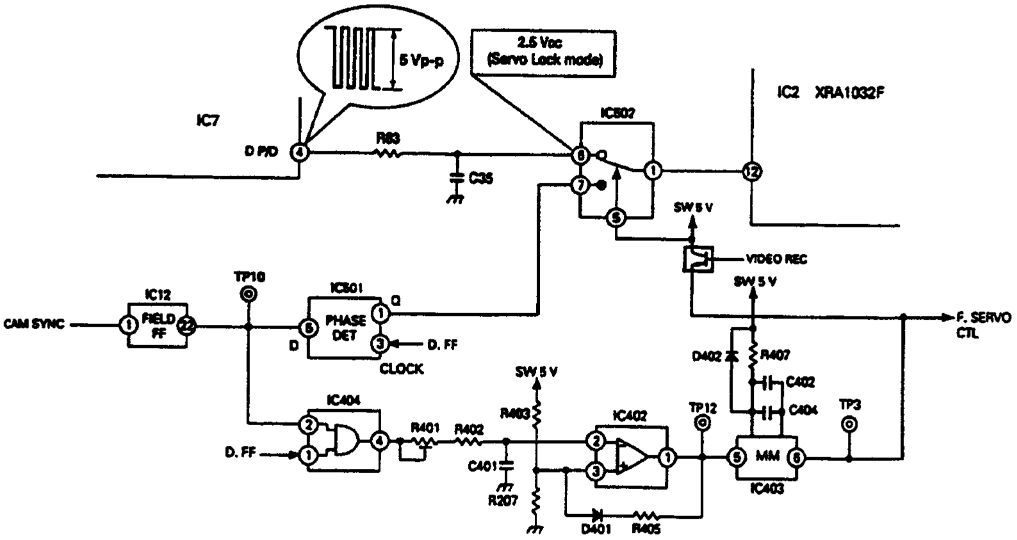

5 Vp-p
2.5 Vdc
(Servo Lock mode)
IC7
D P/D
R83
C35
IC502
IC2 XRA1032F
SW 5 V
VIDEO REC
SW 5 V
F. SERVO CTL
CAM SYNC
IC12
FIELD FF
TP10
IC501
PHASE DET
Q
D
D. FF
CLOCK
IC404
D. FF
R401
R402
C401
R403
R207
SW 5 V
IC402
D401
R405
TP12
D402
R407
C402
C404
MM
IC403
TP3

Fig. 8-8-2 Frame servo circuit

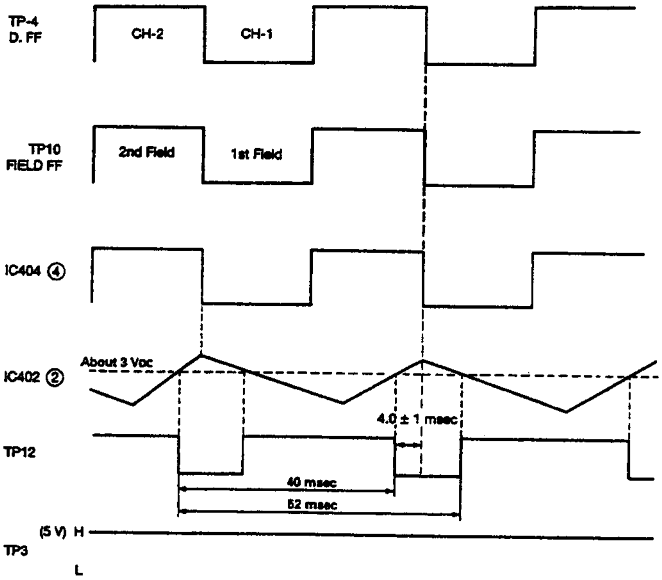


Fig. 8-8-3 Timing chart when frame servo is locked

8.8.4 Zero Frame Edit

This unit widens (DUTY: approx. 68%) the pulse width (DUTY) of the control pulse (CTL PULSE) in order to perform continuous shooting of the zero frame edit.

The control pulse is widened by the ZFE CTL pulse in the pause that occurs after encoding. This pulse is read when continuous shooting is performed and is realized by the zero frame. This only operates during encoding.

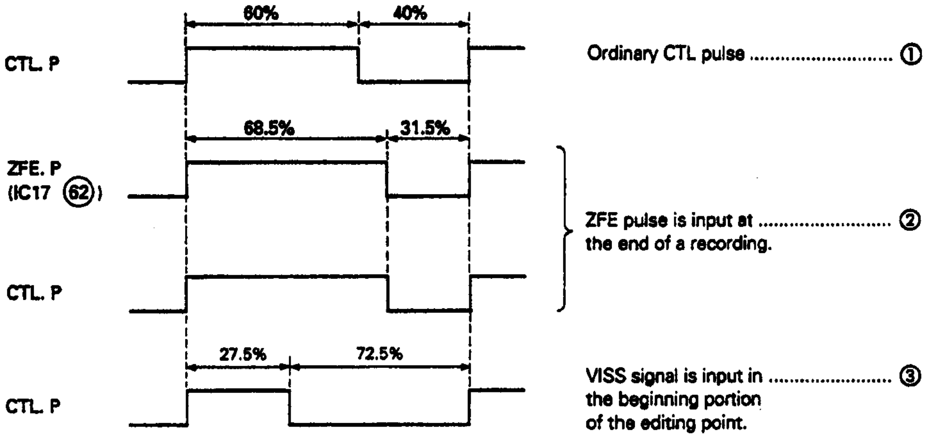

60%
40%
CTL. P
Ordinary CTL pulse .... ①
68.5%
31.5%
ZFE. P
(IC17 ㊷)
ZFE pulse is input at .... ②
the end of a recording.
CTL. P
27.5%
72.5%
CTL. P
VISS signal is input in .... ③
the beginning portion
of the editing point.

Fig. 8-8-5

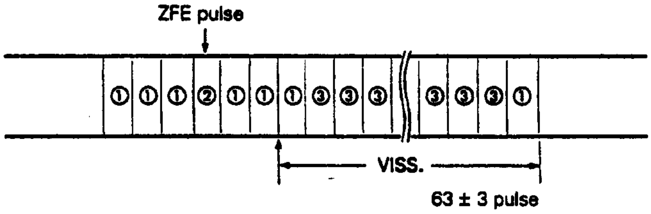

ZFE pulse
① ① ① ② ① ① ① ③ ③ ③ ③ ③ ③ ①
VISS.
63 ± 3 pulse

Fig. 8-8-6

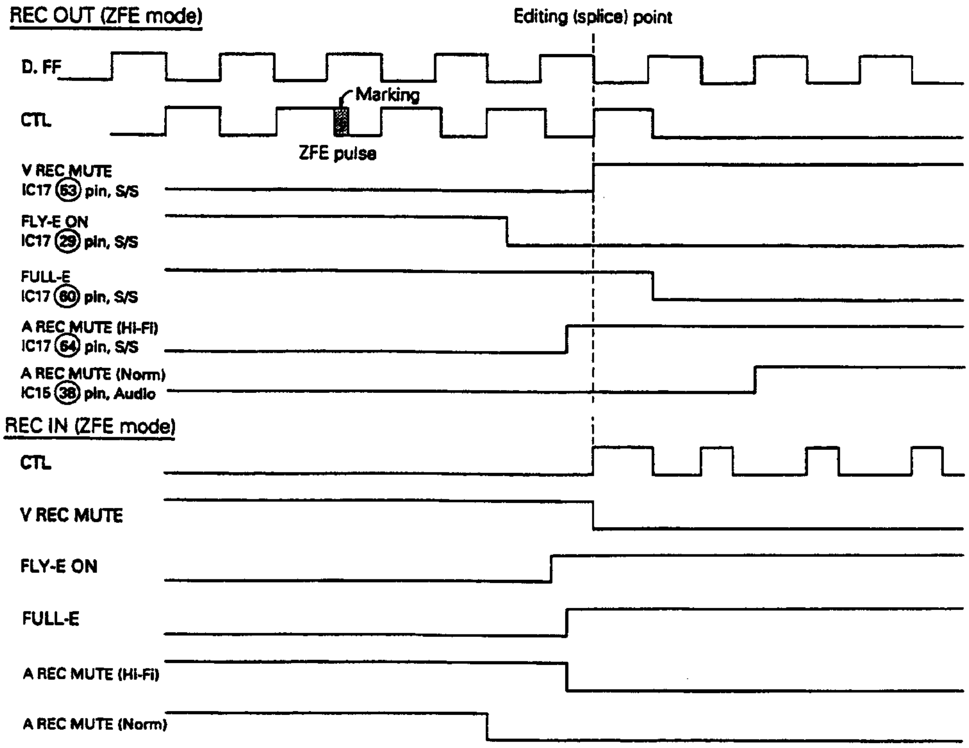

REC OUT (ZFE mode)
Editing (splice) point
D. FF
Marking
CTL
ZFE pulse
V REC MUTE
IC17 ㊸ pin, S/S
FLY-E ON
IC17 ㉙ pin, S/S
FULL-E
IC17 ㊵ pin, S/S
A REC MUTE (HI-FI)
IC17 ㊹ pin, S/S
A REC MUTE (Norm)
IC15 ㊳ pin, Audio
REC IN (ZFE mode)
CTL
V REC MUTE
FLY-E ON
FULL-E
A REC MUTE (HI-FI)
A REC MUTE (Norm)

Fig. 8-8-7 Blanking switch timing

8.8.5 CTL Time Code

A) Summary

This unit changes the pulse width of the control pulse when recording is performed. The VTR which performs assemble editing and TC insertions which use this CTL time code are the BR-S800 and BR-S500 series and the RM-G800 automatic editing control unit.

B) CTL time code is based on CTL signals

By modulating the duty ratio of CTL signals, "0" and "1" signals (dits) are generated. These signals are used to denote time data and user bits data. One item of data is made up of one 2-second CTL signal containing 60 dits(NTSC)/50 dits(PAL). Time data is indicated by 6-digit time information (hours, minutes, seconds) and user bits data is indicated by 4-digit hexadecimal values(0-9,A-F). Each item of CTL time code data is generated every 2 seconds. Frame addresses in between are interpolated with the CTL pulse. This makes it possible to denote the time code with frame-units accuracy. Thus, frame-accurate editing and cue-up are possible using the CTL time code system.

The CTL time code is made up by the CTL pulse soding system. The GY-X3 is equipped with the CTL time code generator.

C) Construction of CTL time code

The construction of the CTL time code is shown in Fig. 8-8-9. As shown in the figure CTL time code is a data that is intermittently output every 2 seconds, however, it is usable as a data of frame unit by interpolating the interval between two CTL time codes.

Although there are two modes of the drop frame mode and the non-drop frame mode provided in the CTL time code standard as shown in the figure, this set comforms to the non-drop frame mode.

D) Operation

A "H" or "L" level signal is output in a 30Hz cycle by the internal timer of the LCD microprocessor from pin 63 of the LCD microprocessor (IC501) in the AUCP circuit board. This signal is input to IC7 pin 23 from pin 63 of the S/S circuit board for the CTL TC signal. IC7 converts the pulse width of the REC CTL pulse output from pin 27 according to the CTL TC signal level. The DUTY of the REC CTL pulse is 27.5% when the CTL TC signal is "H" and is 60% when the level is "L". When recording is paused, the REC CTL pulse also stops and the zero frame edit is performed by the D6 diode-or circuit.

When the recording starts again, the REC CTL starts from the previous continuation point. When the zero frame edit is performed and the REC CTL pulse data is "1", a value of "0" is overwritten to this data. In this case, an interpolation mark (*) is indicated when editing is performed.

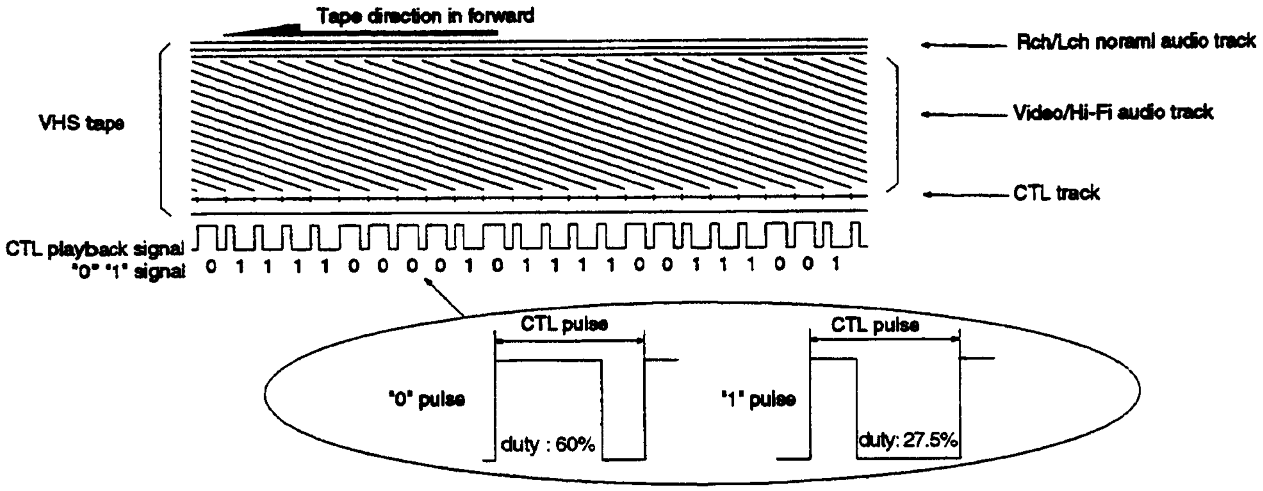
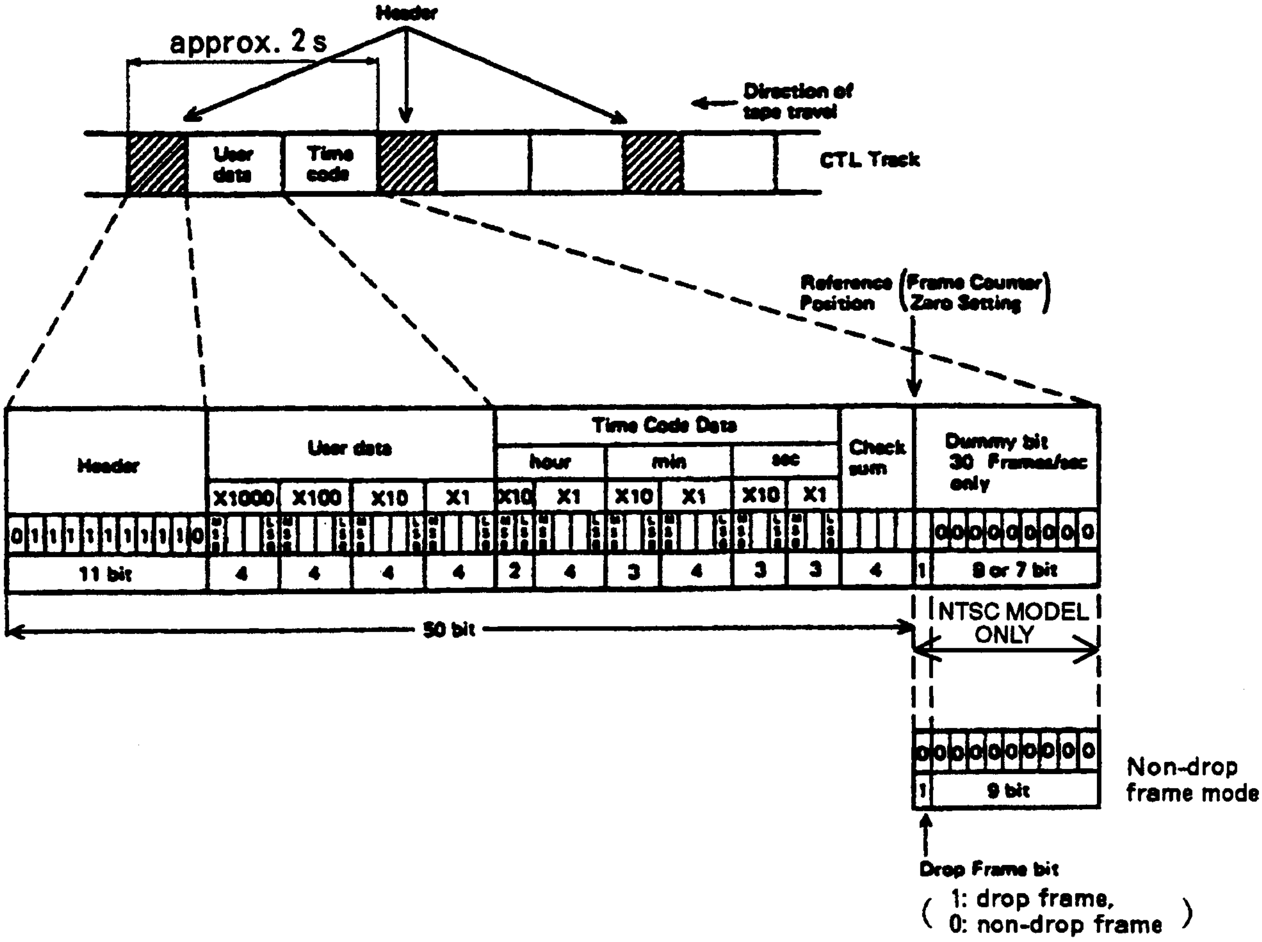


Fig. 8-8-8


Header
approx. 2 s
Direction of tape travel
User data
Time code
CTL Track
Reference Position
(Frame Counter Zero Setting)
Header
User data
Time Code Data
hour
min
sec
Check sum
Dummy bit 30 Frames/sec only
X1000
X100
X10
X1
X10
X1
X10
X1
X10
X1
0 1 1 1 1 1 1 1 1 1 0
MSB
LSB
0 0 0 0 0 0 0 0 0
11 bit
4
4
4
4
2
4
3
4
3
3
4
1
8 or 7 bit
50 bit
NTSC MODEL ONLY
0 0 0 0 0 0 0 0 0 0
1
9 bit
Non-drop frame mode
Drop Frame bit
(1: drop frame, 0: non-drop frame)

Check sum : Lower four bits of a result of binary addition of total 10 digits that all digits of user data and those of time code data.

Digit in the 1st place of second indication : Since CTL time code is written every 2 seconds, digits in the 1st place should be read as follows :

0 = 0 sec, 1 = 2 sec, 2 = 4 sec, 3 = 6 sec, 4 = 8 sec.

Drop frame bit : "0" is written as drop frame bit since this set does not conform to the drop frame mode.
Note : In this set the generator generally operates in the non-drop frame mode since it has no function to switch between drop frame mode and non-drop frame mode. But, if CTL time code is recorded on the tape in the drop frame mode, it is reproduced as the drop frame data in the regeneration mode.

User data : In the regeneration mode, user data is processed as same as other data recorded on the tape.
Note : If a user data contains any data having the same numeric string as that of the header portion, it is erroneously read out and causes malfunction.

Fig. 8-8-9

8.8.6 Mechanism mode

Mechanism mode of this camera is switched by cam gears with are moved by rotation of the mode control motor. There are seven mechanism modes in this camera, such as EJECT, FF/REW, STOP, PLAY, BACK SPACE, REC LOCK and REV, which are detected by the mechacon (mechanism controller) with 3-bit data obtained from the mode sensor 1 and 2, and the AL switch.

Fig. 8-8-10 shows a timing chart when the mode control motor is rotated from the EJECT mode position to the REV mode.

The following describes each mode.

- EJECT mode

In the EJECT mode the mode control motor rotates in the unloading direction from the STOP mode to switch the mode sensor 1 to 'High', the mode sensor 2 to 'Low' and the AL switch to 'OFF'. When the mechanism is set to this mode, the cassette housing mechanically ejects the loaded cassette,

After a certain time after the EJECT mode, the mechacon resets the mode to the STOP mode.

- STOP mode

In the STOP mode, the mode sensors 1 and 2 are 'High' and the AL switch is 'OFF'.

Since the STOP mode is the reference of the other modes, the mechacon makes sure that the mode is set to either of the STOP mode or the REC LOCK (will be described later) mode when the power is turned on. If the mode sensor 1 is 'Low', mode sensor 2 'High' and AL switch 'ON' – namely, in a mode other than the REC LOCK mode, the mechacon sets the mode to the STOP.

The SHORT REW operation is done in the STOP mode of the mechanism.

- FF/REW mode

In the FF/REW mode, the mode control motor is rotated in the unloading direction from the STOP mode, and the mode sensor 1 is 'Low', mode sensor 2 is 'High' and the AL switch is 'OFF'.

Since the main brake is released in this mode, FF or REW operation is performed according to the direction of the capstan motor's rotation.

- PLAY mode

In the PLAY mode, the mode control motor is rotated in the loading direction from the STOP mode, and the mode sensors 1 and 2 are 'High' and the AL switch is 'ON'.

In this mechanism mode, operations of REC, REC PAUSE, STILL and FWD SEARCH are performed.

- BACK SPACE mode

In the BACK SPACE mode, the mode control motor is rotated in the loading direction from the STOP mode, and the mode sensor 1 is 'High', mode sensor 2 is 'Low', and AL switch is 'ON'.

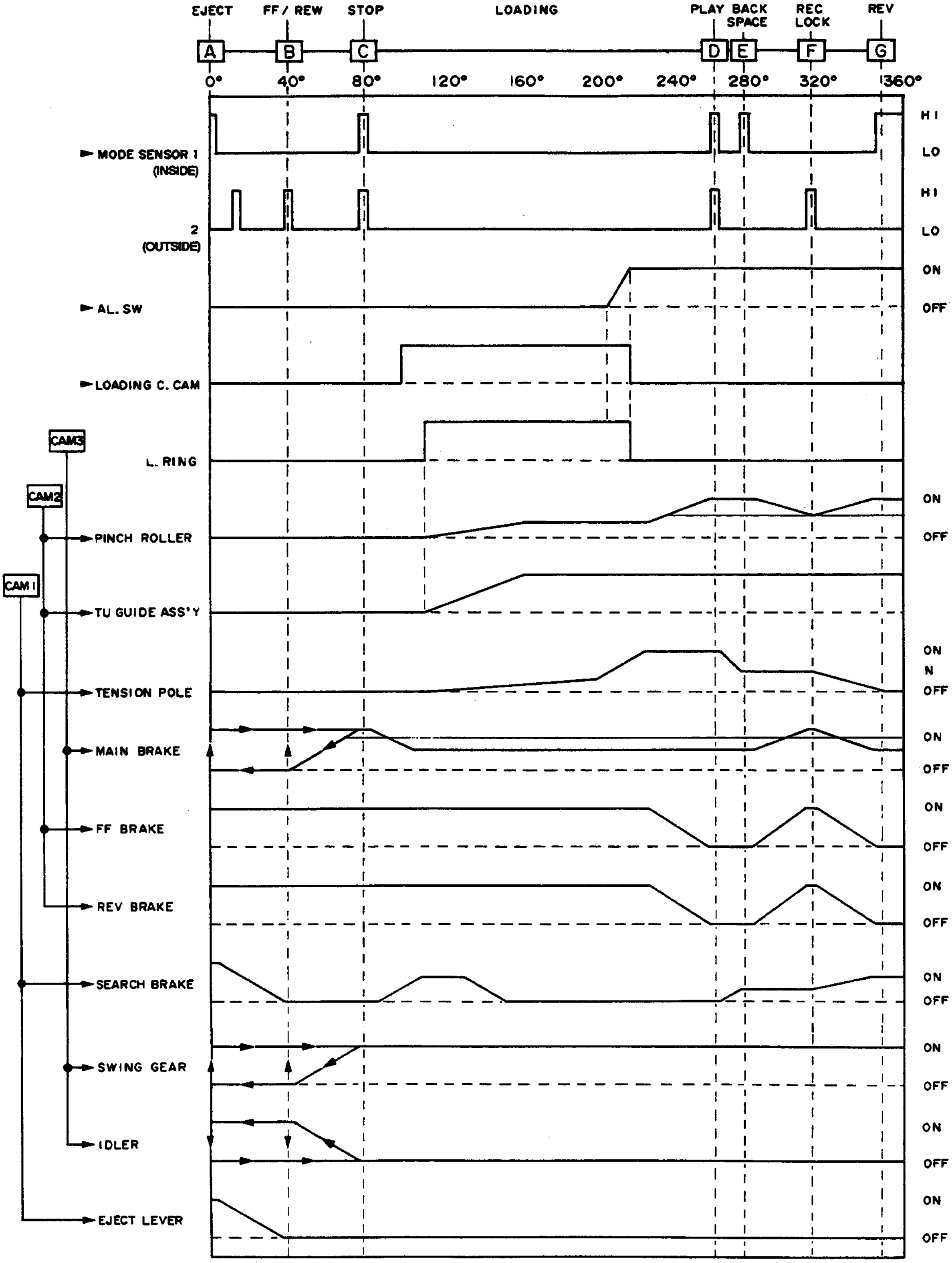
- REC LOCK mode

In the REC LOCK mode, the mode control motor is rotated in the loading direction from the STOP mode to set the mode sensor 1 to 'Low', mode sensor 2 to 'High' and the AL switch to 'ON'.

If the set is in this mode when the power is turned on, the mode control motor starts rotation in the unloading direction a certain time after the power on to shift the mode to the PLAY (REC PAUSE).

- REV mode

The REV mode is realized next to the PLAY mode by rotation of the mode control motor in the loading direction from the STOP mode. In this mode only the mode sensor 1 is 'High' after the process that the mode sensors 1 and 2 were 'Low' after the PLAY mode and then only the mode sensor 2 became 'High'.


EJECT
FF / REW
STOP
LOADING
PLAY
BACK SPACE
REC LOCK
REV
A
B
C
D
E
F
G
0°
40°
80°
120°
160°
200°
240°
280°
320°
360°
MODE SENSOR 1 (INSIDE)
2 (OUTSIDE)
AL. SW
LOADING C. CAM
L. RING
CAM3
CAM2
CAM1
PINCH ROLLER
TU GUIDE ASS'Y
TENSION POLE
MAIN BRAKE
FF BRAKE
REV BRAKE
SEARCH BRAKE
SWING GEAR
IDLER
EJECT LEVER
HI
LO
HI
LO
ON
OFF
ON
OFF
ON
OFF
ON
N
OFF
ON
OFF
ON
OFF
ON
OFF
ON
OFF
ON
OFF
ON
OFF
ON
OFF

A - EJECT

B - FF/ REW

C - STOP. SHORT REW

D - PLAY. REC. STILL. FWD SEARCH.

E - BACK SPACE

F - REC LOCK

G - REV SEARCH

Fig. 8-8-10

8.9 AUCP CIRCUIT BOARD

8.9.1 Audio

(1) REC Mode

AUX Input

The balanced AUX signal input from CN18 pins 2 and 3 is switched by the AUX INPUT LEVEL SW (S1) that is set to correspond to the input signal level (–60dBs/+4dBs), and is output for the -30dBs unbalanced signal by IC1 and IC2. The output signal switches the IC12 input terminal (ON CHANNEL) by the setting of the AUX REC level switch as shown in Table 8-9-1.

INPUT LEVEL(B)	REC LEVEL (A)	ON CHANNEL	SIGNAL PROCESS
–60 dBs(L)	MANU (L)	X0, Y0	LIMITER
	AUTO (H)	X1, Y1	LIMITER/ALC
+4 dBs(H)	MANU (L)	X2, Y2	REC LEVEL ADJ.
	AUTO (H)	X3, Y3	LIMITER/ALC

Table 8-9-1 Switched status of IC12

- **+4 dBs Input (S1:+4)**
  S1 is set to +4 when the monaural line input is performed in the AUX INPUT terminal of this unit.
  When the AUX REC level switch (S3) is set to "AUTO", the IC12 output selects X3 and Y3 and the audio signal is then processed by the limiter amp (IC7) and ALC circuit (IC22) and output to IC206. When the AUX REC level switch is set to "MANU", the level adjustment is performed by VR1 (AUDIO REC LEVEL), the signal is amplified (IC3) and output to IC206 from IC12.

- **–60dBs Input (S1: –60)**
  S1 is set to -60 when the input is performed by the external microphone (monaural) in the AUX INPUT terminal of the unit.
  When the AUX REC level switch is set to "AUTO" (S3: AUTO), the output of IC12 selects X1 and Y1, the audio signal is then processed by the limiter amplifier (IC7) and the ALC circuit (IC22) and input to IC206. When the AUX REC switch is set to "MANU" (S3: MANU), the level is adjusted by VR1 (AUDIO REC LEVEL) and output to IC206 through the limiter amplifier (IC7) from IC12.

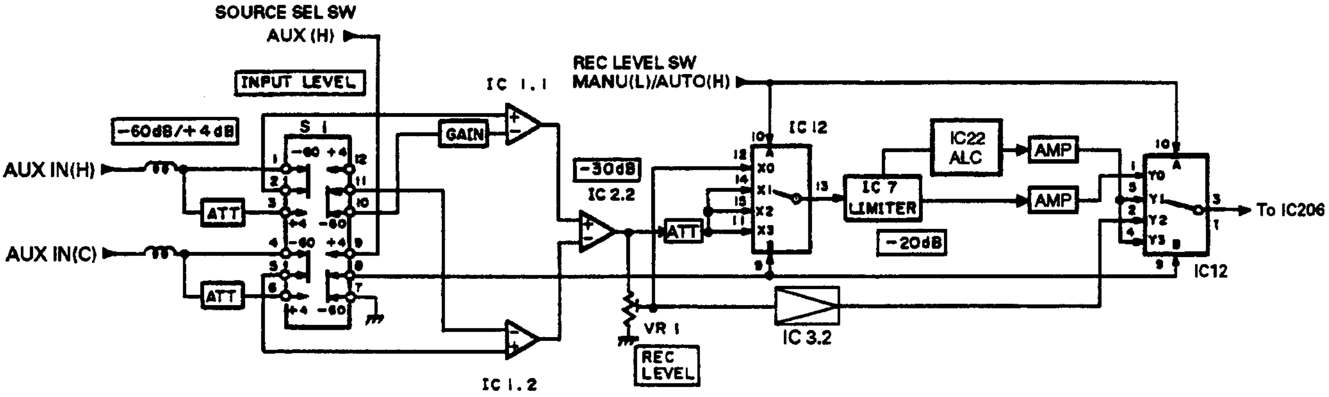

SOURCE SEL SW
AUX (H)
INPUT LEVEL
–60dB/+4dB
AUX IN(H)
AUX IN(C)
ATT
ATT
S1
1
2
3
4
5
6
–60
+4
+4
–60
–60
+4
+4
–60
12
11
10
9
8
7
IC 1.1
GAIN
IC 1.2
–30dB
IC 2.2
ATT
VR 1
REC LEVEL
REC LEVEL SW
MANU(L)/AUTO(H)
IC 12
10
A
12
X0
14
X1
15
X2
11
X3
B
9
13
IC 7
LIMITER
–20dB
IC22
ALC
AMP
AMP
IC 3.2
10
A
1
Y0
5
Y1
2
Y2
4
Y3
B
9
3
T
To IC206
IC12

Fig. 8-9-1 AUX INPUT

The audio limiter amplifier is the circuit that records excessive input audio without distortion. This section describes the characteristics of the audio limiter circuit used in this unit.

- The limiter band extends up to more than 40dB from the input reference level (–44dBs) to prevent distortion without degradation of the S/N ratio.
- The time until the limiter circuit operates (attack time) is approximately 50ms when there is an audio signal 20dB greater than the audio input reference level.
- The audio signal is not distorted even if an audio signal 20dB greater than the audio input reference level is input.
- When the audio signal input level decreases, the time until the limiter circuit goes off (recovery time) increases and the audible incompatibility is minimized.

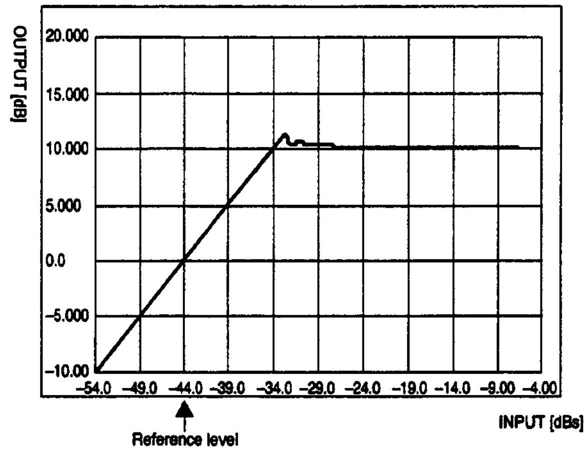


Fig. 8-9-2 Input-output property

When the AUX REC LEVEL switch is set to "AUTO", the limiter is applied to the same level for both the normal audio and the Hi-Fi audio to eliminate the level difference of both audio signals. The limiter circuit block figure is shown in Figure 8-9-3.

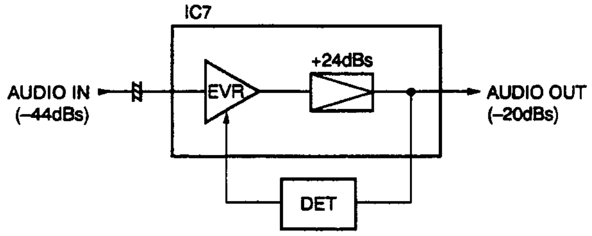


Fig. 8-9-3 Limiter Circuit

The input audio signal (-44dBs) is amplified approximately +24dB by the amplifier in IC7. (-44dBs: The IC2.2 output is -30dBs but is set to -44dBs because the level is decreased approximately 14dB by the attenuator (ATT).) The amplified signal is fed back to the EVR (Electric Variable Resistor) in IC5 and the excessive level component of the signal is compressed by the operation of the EVR when an excessive audio signal is input.

■ Camera Microphone Audio Input

When the accessory microphone for this unit is used, the SOURCE SEL SW (S201) is set to either "MIC" or "BOTH". However, the control setting input to IC4 pin 9 is set to "L" at this time. The IC4 output of 2X, 2Y or 3X, 3Y cannot be selected at this time. Consequently, only output switching can be performed according to the setting of the MIC REC LEVEL switch. (Refer to Table 8-9-2.)

REC LEVEL (A)	ON CHANNEL	SIGNAL PROCESS
MANU (L)	X0, Y0	LIMITER
AUTO (H)	X1, Y1	LIMITER/ALC

Table 8-9-1 Switched status of IC4

The same signal processing is performed for the CAM MIC IN signal (reference level: –30dBs) input to CN9 pin 4 as when the AUX input level is –60dBs (when the external microphone is used) according to IC4 (switch), IC5 (limiter amplifier) and IC9 (ALC) and then the signal is input to IC206. (Refer to the previous item.)

■ Hi-Fi Audio Recording

For the audio signal output from IC206, the output of pin 3 is the R channel signal, the output of pin 13 is the L channel signal and these signals are output to IC201 pin 64 and 84 respectively. IC201 is the signal processor for the Hi-Fi audio and the reference input level is set to –20dBs. The serial DATA from the S/S circuit board is converted to parallel data in this IC, the REC/PB of the Hi-Fi/NORMAL is switched and the MUTE, NORMAL audio signal BIAS ON and other control functions are performed. This IC performs the VHS Hi-Fi audio signal processing. It also performs the frequency modulation and sets the R channel audio signal to (NTSC: 1.7 MHz, PAL: 1.8 MHz) and the L channel to (NTSC: 1.3 MHz and PAL: 1.4 MHz). The modulated L/R channel audio signal is output to pin 43 and pin 21 and mixed in R210 and R236 respectively. The mixed FM audio signal is output to the rotary FM-audio head from CN11 pin 24 and Hi-Fi recording is performed.

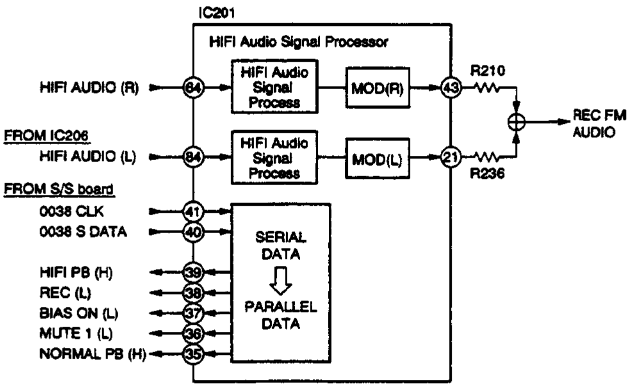


Fig. 8-9-4

- **Normal Audio Recording**

The audio signal output from IC206 pin 3, 13 is mixed in R303, R304 to produce the monaural audio signal and input to IC204 pin 11. IC204 is the Normal Audio Signal Processor and is equipped with the necessary circuits for normal audio signal processing such as the playback preamplifier, line amplifier, ALC, recording amplifier, head switch, recording bias, etc.

The audio signal input to IC204 is amplified by the lineup or ALC circuit. The normal audio signal affects the limiter in the ALC circuit so comparatively high levels in the Hi-Fi audio signal cannot be recorded. The limiter circuit level is +3dB higher than the reference level. The audio signal output from pin 14 passes the IC205 inverter and is adjusted to the recording level at VR205 (N.A REC LEVEL). Then it is input to IC204 again and pauses through the REC AMP and is output. The normal audio signal is applied to the bias at the level set at VR208 (BIAS LEVEL), is output to the A/C head at CN16 pin 1 and recorded as normal audio.

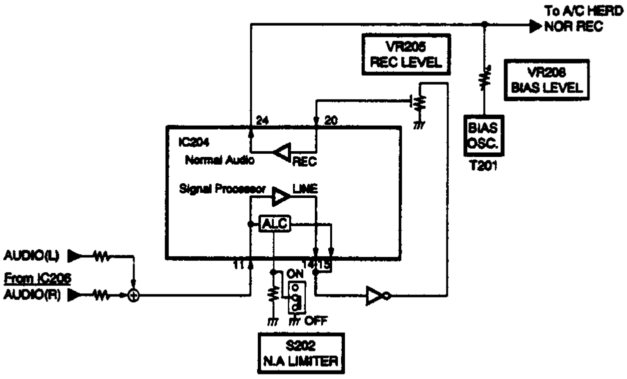

To A/C HERD
NOR REC
VR205
REC LEVEL
VR208
BIAS LEVEL
24
20
IC204
Normal Audio
REC
Signal Processor
LINE
ALC
BIAS
OSC.
T201
AUDIO(L)
From IC206
AUDIO(R)
11
14
15
ON
OFF
S202
N.A LIMITER

Fig. 8-9-5 Normal Audio Recording

(2) PB Mode

- **Hi-Fi Audio Playback**

The audio Hi-Fi signal that is played back is input to the AUCP circuit board from CN11 pin 23, separated into the R channel (NTSC: 1.7 MHz, PAL: 1.8 MHz) and L channel (NTSC: 1.3 MHz, PAL: 1.4 MHz) signals and input to IC201 (Hi-Fi Audio Signal Processor). Each signal is demodulated at this IC and Hi-Fi audio signal processing is performed to the demodulated signals. After the signal level is adjusted at VR201 (Rch PB LEVEL) and VR203 (Lch PB LEVEL) the signals are sent to the monitor output circuit.

A hyper-tangent format is used in IC201 to decrease the switching noise when Hi-Fi audio playback is performed.

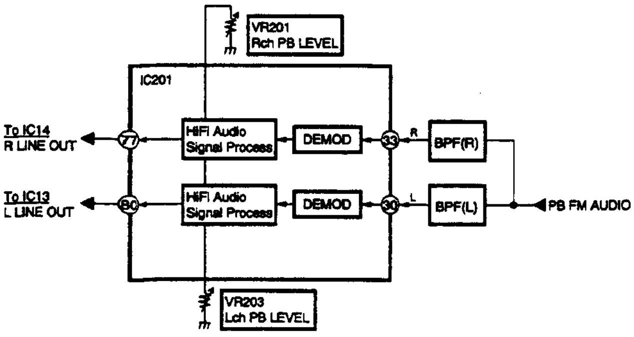

VR201
Rch PB LEVEL
IC201
To IC14
R LINE OUT
77
HiFi Audio
Signal Process
DEMOD
33
R
BPF(R)
To IC13
L LINE OUT
80
HiFi Audio
Signal Process
DEMOD
30
L
BPF(L)
PB FM AUDIO
VR203
Lch PB LEVEL

Fig. 8-9-6 Hi-Fi Audio Playback

- **Normal Audio Playback**

The normal audio signal that is played back is input to the AUCP circuit board from CN16 pin 2 and then input to IC204 (Normal Audio Signal Processor). VR206 (PB EQ) adjusts the frequency characteristics of the normal audio signal. The normal audio signal output one time from IC206 has the playback level adjusted at VR207 (PB LEVEL) and is input again to IC204. After amplification by the LINE AMP in the IC, the signal is output to the monitor circuit.

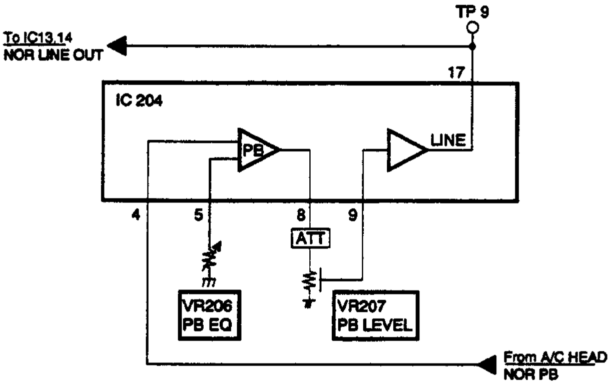

TP 9
To IC13,14
NOR LINE OUT
17
IC 204
PB
LINE
4
5
8
9
ATT
VR206
PB EQ
VR207
PB LEVEL
From A/C HEAD
NOR PB

Fig. 8-9-7 Normal Audio Playback

- Monitor Output

The Hi-Fi audio signals of the L and R channels are input in pins 13 and 14 of the IC and the normal audio signal is input in pin 7. IC13 and IC14 contain the switching function and the output is switched to either the Hi-Fi signal or normal signal depending on the setting of the Hi-Fi REC SW (S2.3). For the audio signal output from IC13 and IC14 is the monitor output level for both the L and R channels are adjusted by the VR3 and VR4 (monitor level). The output signal from IC13 and IC14 is output to the audio level meter. Q5, Q6 and Q8, Q9 are the transistors used for mute control. The audio signal is set to MUTE only when the power is turned on.

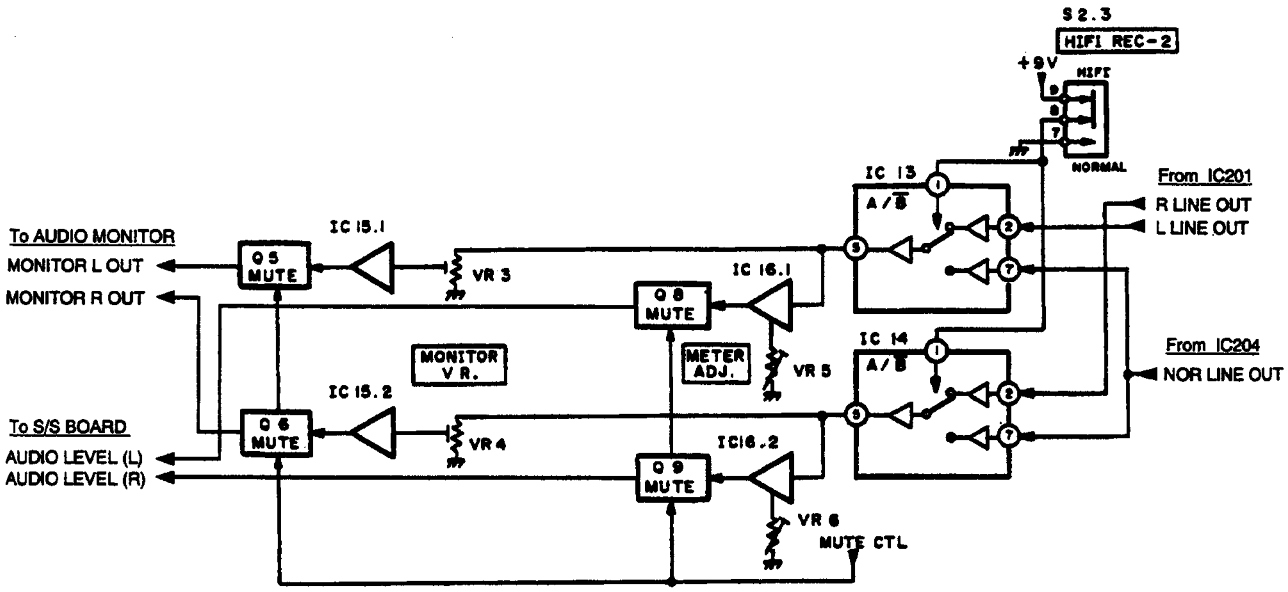

S2.3
HIFI REC-2
+9V
HIFI
NORMAL
IC 13
A/B
From IC201
R LINE OUT
L LINE OUT
To AUDIO MONITOR
MONITOR L OUT
MONITOR R OUT
IC 15.1
Q5 MUTE
VR 3
IC 16.1
Q8 MUTE
MONITOR V R.
METER ADJ.
VR 5
IC 14
A/B
From IC204
NOR LINE OUT
IC 15.2
To S/S BOARD
AUDIO LEVEL (L)
AUDIO LEVEL (R)
Q6 MUTE
VR 4
IC16.2
Q9 MUTE
VR 6
MUTE CTL

Fig. 8-9-8 Monitor Output Circuit

8.9.2 CPU

The CPU performs control of each part of the camera and automatic functions such as the automatic iris, automatic white balance and communication with the S/S circuit board.

(1) CPU

IC 401 (CPU) is the Fujitsu MB90T678PF and the control program is written in IC411 (EPROM).

The clock which drives the CPU is generated by X401 (6MHz). The SE circuit board receives the VD signal which adjusts the operation timing to the image signal depending on the processing contents. This CPU is internally equipped with an 8-bit A/D converter and DC analog values from 0 to 5 can be input directly. The R-Y and B-Y signals for the automatic white balance control which are necessary for the automatic control, iris position signal, the PEAK value and the APL value of NAM (No Additive Mix) signal, each signal of the RETURN AUDIO, gain and DC voltage value (0, 2.5, 5V) which are set at the W. BAL switch are input.

(2) EPROM

IC 411 (EPROM) is a MITSUBISHI M27C512-15F1 and contains the program which controls CPU (IC401). The program cannot be modified except by replacing it. The M27C512-15F1 cannot be used by itself because the program is not specifically written for it. Always make orders with the program numbers when it is replaced. Please refer to Section 6 "Electrical Parts List" for the program numbers. However, the CPU is not shipped from the factory even though this program number is used orders to the MITSUBISHI Co.

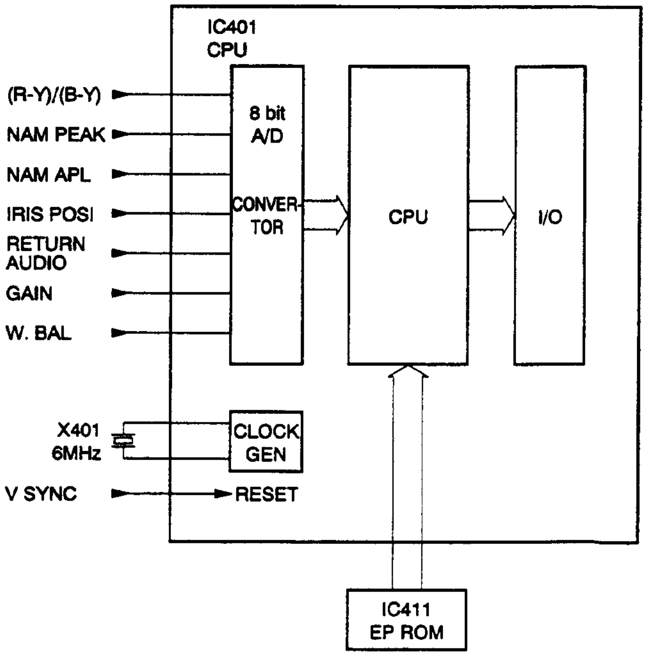

IC401
CPU
(R-Y)/(B-Y)
NAM PEAK
NAM APL
IRIS POSI
RETURN AUDIO
GAIN
W. BAL
8 bit A/D CONVERTOR
CPU
I/O
X401 6MHz
CLOCK GEN
V SYNC
RESET
IC411 EP ROM

Fig. 8-9-9 CPU

(3) EEPROM

IC402 is the EEPROM which records the camera condition. The R/B GAIN CTL signal voltage value, MAX GAIN ON/OFF, shutter condition, TIME and DATE settings and view-finder display mode settings are recorded.

(4) Reset IC

IC403 is the reset IC. This IC outputs a reset pulse to prevent a runaway malfunction when the power is turned on or the power voltage is lowered.

(5) Character Signal Generator

IC 406 is the character signal generator. It supplies the V SYNC and HD pulse from the SSG of the SE circuit board and determines the positions on the image signal. In the output character data, the VF CHARA signal output from CN11 pin 21 is only output in the view-finder such as in the character displays when the check mode is set.

The T/D BACK and TIME/DATE signals output from CN12 pin 15 and 16 are character data and they are recorded on the tape with other data in addition to the viewfinder data.

(6) Area Gate Signal Generator

IC404 is the area gate generator. The area gate signal is generated to remove the image signal in certain areas when the automatic white balance and the automatic iris are set. This signal is generated based on the V SYNC and HD pulses to adjust the timing by the image signal.

The area gate signal for the automatic iris is output from IC404 pin 18 and removes the image signal at the average side detection circuit and peak side detection circuit separately.

The area gate signal for the automatic white balance is output from IC404 pin 17 and passes through the IC415 AND gate. This AND gate is used to switch the full-time automatic white balance. The AND gate output level is regularly set to "H" although it is set to "L" when the full-time automatic white balance is set and detects the image signal in the entire screen.

(7) Automatic Iris

The automatic iris is the function which controls the lens diaphragm to correspond to the appropriate F value for the light quantity which changes every moment.

The NAM signal (maximum value of the R, G and B signals) which is output from PR2 board is input to the AUCP circuit board.

In Figure 8-9-11, Q403 changes the inclination of the components where the amplification ratio is high in the same manner as the knee circuit in the PR2 circuit board. Q404 compensates for the temperature characteristics of the knee point voltage of the Q403 circuit. The NAM signal is then separated into two systems and only the area gate signal part produced in IC404 (area gate generator) is passed to both of these systems

In the average detection circuit, the image signal passes through the integral circuit of R443 and C420, passes the amplifier of IC 422.2 (amplification ratio, approximately 1.1 times) and is input to IC401 (CPU).

The peak-and-hold processing is performed to the image signal in the peak detection circuit at D407 and C417 and the signal is output from the IC422.1 voltage follower. At this time, it is amplified by an amplification ratio of approximately 1.1 times by the NFB amplifier at IC420.2. This signal is input to IC401 (CPU).

The APL signal and PEAK signal are input to the CPU separately and converted to 8-bit (256 gradation) digital data. The CPU mixes the data for the APL value and PEAK value and controls the iris to equalize the data to the reference values set in the CPU. The signal (V RESET) is input to reset the data in the CPU in order to renew the PEAK value for each vertical timing cycle.

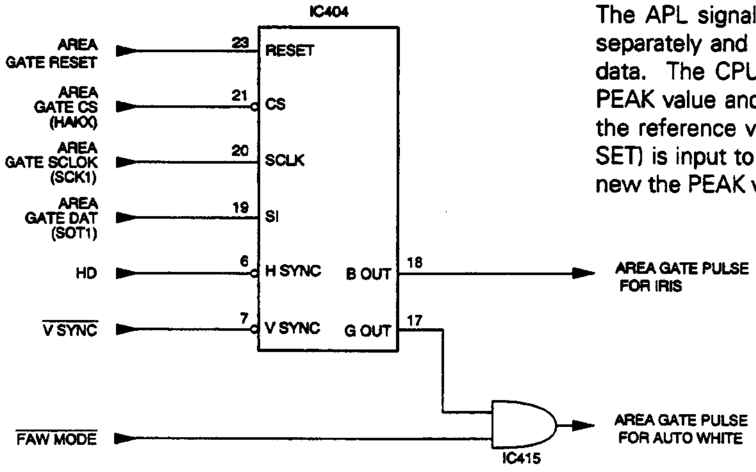

IC404
AREA GATE RESET
23
RESET
AREA GATE CS (HAKX)
21
CS
AREA GATE SCLOK (SCK1)
20
SCLK
AREA GATE DAT (SOT1)
19
SI
HD
6
H SYNC
B OUT
18
AREA GATE PULSE FOR IRIS
V SYNC
7
V SYNC
G OUT
17
FAW MODE
IC415
AREA GATE PULSE FOR AUTO WHITE

Fig. 8-9-10 Area Gate Generator

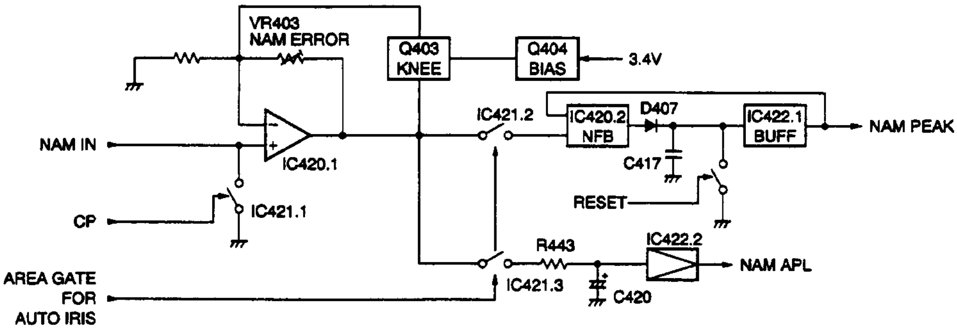

VR403
NAM ERROR
Q403
KNEE
Q404
BIAS
3.4V
NAM IN
IC420.1
IC421.2
IC420.2
NFB
D407
IC422.1
BUFF
NAM PEAK
C417
RESET
CP
IC421.1
R443
IC422.2
NAM APL
AREA GATE FOR AUTO IRIS
IC421.3
C420

Fig. 8-9-11 Auto Iris Control

(8) Automatic White Balance Control

This unit contains the control function for the automatic white balance and full-time automatic white balance.

■ Automatic White Balance Control

The automatic white balance circuit automatically adjusts the gain of the R and B signals in the PR1 circuit board and corrects the white balance by controlling the R-Y/B-Y signals in the CPU circuit board so there are no gradations. The R-Y/B-Y signals input to the AUCP circuit board from the SE circuit board are removed by the previously described area gate signal used for the automatic white balance function. The signal is then converted to a voltage ranging from 0 to 5V DC which can be input directly to the CPU. The CPU converts the level of the R-Y/B-Y signals from DC voltage to 8-bit (256 gradation) digital data in the internal A/D converter. When the R-Y/B-Y signals converted to digital data are expressed as values from 0 to 255 have a value of "128" (when the DC voltage input to the CPU is 2.5V), both the R-Y/B-Y signals are set to a value of "0" (no gradation condition). When there is no value of "128" input to the CPU, the CPU outputs this difference as digital data. This value is converted to a voltage value by the D/A converter and sent to the automatic white balance circuit of the PR1 circuit board for the R and B GAIN CTL signals.

The gain of the R and B signals is then adjusted by this control signal, the R-Y/B-Y signals are input to the CPU again and this operation is repeated. The automatic white balance control stops when the digital data in the CPU is set to a value of "128".

■ Full-time Automatic White Balance

The full-time automatic white balance is a function that enables the automatically follows the white balance even when the color temperature of the light source changes during the shooting. The full-time automatic white balance function uses the principle in which the color temperature changes following the I shaft. This function is forced to the FAW (Full-time Automatic White balance) mode when the FAS (Full-time Automatic Shooting) function is set ON. The FAW function can be used independently according to the setting of S401 on the AUCP circuit board. (Refer to item 1.11.1)

The full-time white balance control is different than the normal automatic white balance control because the image signal is not removed by the area gate and operates to maintain the value of the R-Y/B-Y signal of the main unit screen to "128".

8.9.3 LCD Microprocessor

IC501 is the LCD microprocessor. The LCD microprocessor is connected directly to the LCD (IC502) and sends the segment data from pins 16 to 45. The data (BATT D0/D1/D2) for the battery remaining charge quantity display in the viewfinder is sent to CPU (IC401) by pins 60 to 62.

8.9.4 LCD Microprocessor Reset

The AL5V voltage generated by the PS1 circuit board is supplied to the AUCP and S/S circuit boards. Even when the main unit power is set OFF, the AL5V is supplied to the AUCP circuit board from the S/S circuit board because it is charged in C73 of the S/S circuit board.

The LCD display contents can be maintained even when the power is set OFF such as when replacing the battery, if it is only for a short time, because the LCD microprocessor uses the AL5V to operate. The LCD microprocessor is reset if the RESET switch (S505) is set ON because the AL5V is connected to the GND.

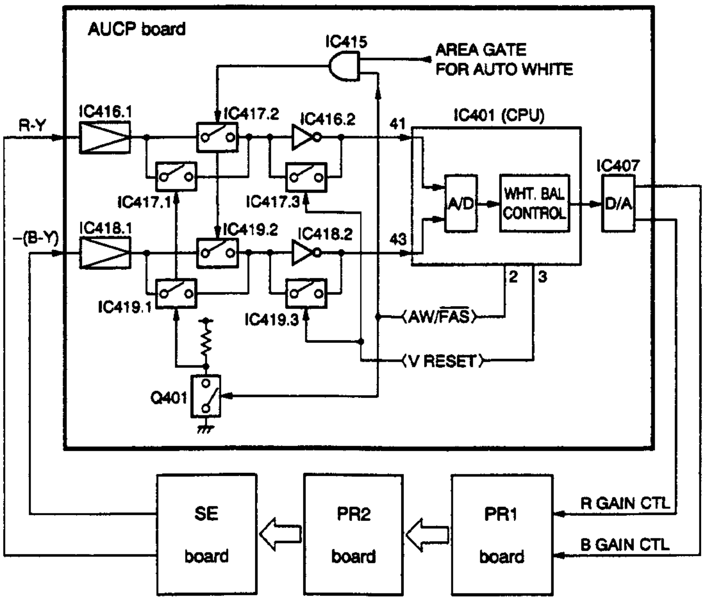


Fig. 8-9-12 Auto White Balance Control